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ANIMAL RIGHTS Extremists

Lionel Tiger on The Human Nature Project

The Ethics of Skeptical Investigation

The Supernatural—Not So Super?
Three Perspectives

Merchandising God: The Pope Tart

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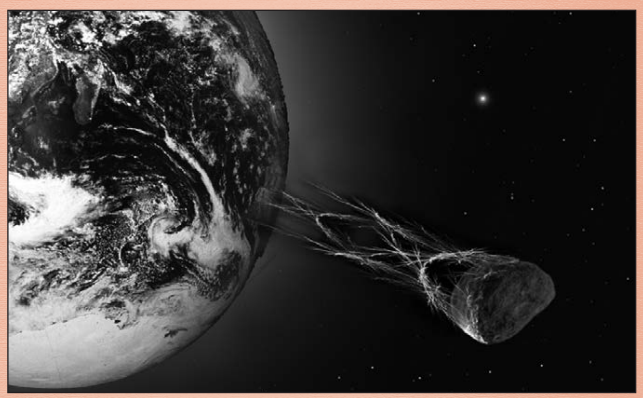

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Editor's Note

Dangers of Animal Rights Extremists

We haven't before dealt in our pages with the dangers of the extreme animal rights movement. The cover article by P. Michael Conn and James V. Parker should make clear to everyone how serious this issue is. Here is where anti-scientific attitudes and actions cease to be theoretical concerns for polite academic debate and often become illegal and criminal. Conn is associate director of the Oregon National Primate Research Center. Conn and Parker's new book, *The Animal Research War*, is to be published this month.

The animal rights extremists Conn and Parker describe are not your average citizens who like and respect animals and want no harm to come to them. These extremists are another breed altogether. They threaten much of the scientific research enterprise. They use intimidation, vandalism, arson, and terrorism against researchers and their property. In the name of saving animal lives, they have no compunction about putting human lives at risk. These tactics have no place in civilized social and political debate.

The FBI describes the Earth Liberation Front, one extreme element of the animal rights movement, as "the largest and most active U.S.-based terrorism group." If such groups have their way, much of the basic research that leads to important medical advances will be shut down.

The topic couldn't be timelier. The Society for Neuroscience issued a call in February for "protecting researchers and research." It says there were more attacks against researchers in the first six months of 2007 than in the five-year period of 1999–2003.

Many people don't realize that there are strict federal standards for animal research. The Animal Welfare Act provides rigorous standards and high-quality care. Animal researchers abide by these guidelines and continually struggle with all the ethical issues surrounding the treatment of research animals. They shouldn't have to do it in a battle zone.

* * *

The distinguished anthropologist Lionel Tiger discourses provocatively in this issue on a different aspect of our troubled relationships with animals: the strange tendency we have of separating ourselves from the animal kingdom. Even in academia this is a long tradition. Social science and natural science departments are virtually quarantined from each other. He asks: "Does the fact that natural science is one thing and social science another mean that social behavior is somehow not natural?" The consequences of this kind of thinking "are enormous not only for science itself but for social policy, legal theory, ethical analysis, and our understanding of the sources of pleasure and pain."

Tiger, the Charles Darwin Professor of Anthropology at Rutgers University and author of such books as *The Imperial Animal* (with Robin Fox) and *The Apes of New York,* notes that social sciences' "allergy to reductionism" and suspicion of genetic causes account for some of this ill-advised separation. And from his anthropological perspective, he offers a discussion of nine "behavioral vitamins" (his alternative to the loaded term "rights") that individuals and the body-social need.

—Kendrick Frazier

Skeptical Inquirer

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Brain Neuroimaging Experiments Find 'Evidence against Existence of Psi' . . . or Do They?

KENDRICK FRAZIER

Can imaging of the brain help resolve the debate over whether psi exists or not? Two researchers at Harvard University think it can, and in fact they have now published neuroimaging results that they say "are the strongest evidence yet obtained against the existence of paranormal mental phenomena."

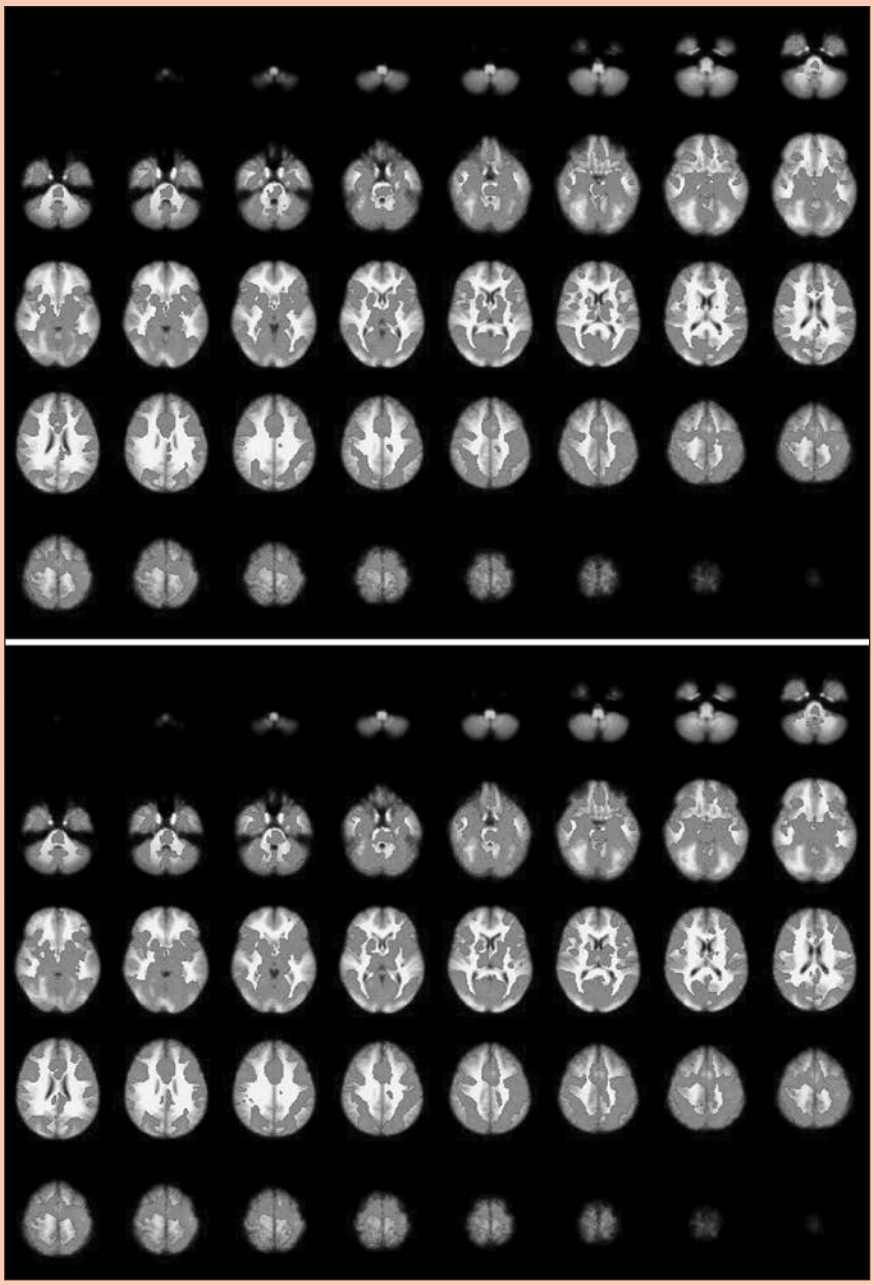
The researchers note that despite widespread public belief in paranormal mental phenomena such as telepathy or mind-reading, also known as psi, "there is not compelling evidence that psi exists."

Among academic scientists, psychologists especially tend to be skeptical of reports of psi, particularly the anecdotal kind that impress people unaware of all the psychological biases that allow them to so easily misinterpret evidence: the clustering illusion, availability error, confirmation bias, illusion of control, and many others.

But if psi processes do exist, they are a mental activity, and there should be some way to detect that activity in the brain by modern neuroimaging techniques. Samuel T. Moulton and Stephen M. Kosslyn of the Harvard Psychology Department feel strongly that with sophisticated neuroimaging techniques, psychology is in a position to advance the psi debate, which in the past "has produced more heat than light." They set up experiments using functional magnetic imaging (fMRI) of the brain to try to document the existence of psi.

They wanted to see if the brain might respond selectively to purported psi stimuli. By "psi stimuli" they mean stimuli presented not through the usual senses but telepathically (mind to mind), clairvoyantly (world to mind), and precognitively (future to present). They designed the experiment to produce positive results if telepathy, clairvoyance, or precognition exist. They made minimal assumptions about psi and think they have offered the broadest possible test of the psi hypothesis.

The researchers used sixteen pairs of paid volunteers, thirty-two people total. Some were couples, some emotionally close roommates or friends. There was one mother-son pair, one pair of sisters, and two identical twin pairs. Fourteen



Can brain neuroimaging help resolve the psi debate? Psi (top) and non-psi (bottom) stimuli evoked widespread but indistinguishable neuronal responses in the brains of test subjects. Images courtesy of S.T. Moulton and S.M. Kosslyn, *Journal of Cognitive Neuroscience* (20:1).

were men, eighteen were women.

Each pair designated one of its members as "sender" and one as "receiver." The test stimuli consisted of 240 pairs of unique photographs covering a range of content, from emotionally negative pictures (a snake, a dead body, a violent scene) to neutral and positive pictures (a tissue box, a wedding, an erotic couple). They randomly assigned each picture to a stimulus category (psi, non-psi) and ensured that across participants each picture was assigned to each category an equal number of times.

The receiver's head was placed in a high-speed magnetic resonance scanner, and a series of forty-eight trials for each volunteer pair began. The sender of each pair, in a separate room, was signaled to sequentially view the images for ten to twenty-two seconds and then to try to "influence the receiver" with the psi stimulus ("sending" one image). They were asked to adopt a "playful" attitude, maintain an active interest in the stimuli, and use whatever "sending" tactics they deemed appropriate. (In this they were following the advice of parapsychology researchers who believe certain attitudes are conducive to psi.)

The receiver was presented a pair of photos (projected onto a mirror attached to a head coil) and then told to press a button selecting which one he or she felt was the psi stimulus. The receiver then viewed the psi stimulus a second time to account for the possibility of precognition.

One set of results showed the participants performed almost exactly as they would by chance on the guessing task. Out of 3,687 recorded responses, the receivers correctly guessed the psi stimulus 1,842 times (50.0 percent).

But the key results were the comparison of brain activation for psi stimuli versus non-psi stimuli. The researchers looked for anatomical locations across the brain that responded differently to these stimuli for the entire group and for each individual recipient. Analysis of the group data revealed "no evidence whatsoever of psi." Psi and non-psi stimuli evoked widespread but indistinguishable neuronal responses.

"The results support the null hypothesis that psi does not exist," report Moulton and Kosslyn in the *Journal of Cognitive Neuroscience* (20:1, 2008). "The brains of our participants—as a group and individually—reacted to psi and non-psi stimuli in a statistically indistinguishable manner." The results cannot be explained by a lack of statistical power, they say. "Even if the psi effect were very transient, as are many mental events, it should have left a footprint that could be detected by fMRI."

The researchers say they went out of their way to incorporate variables (biological relatedness of participants, evocative stimuli) widely considered by parapsychologists to help facilitate psi.

The test stimuli consisted of 240 pairs of unique photographs covering a range of content, from emotionally negative pictures (a snake, a dead body, a violent scene) to neutral and positive pictures (a tissue box, a wedding, an erotic couple).

As such, "the current null results do not simply fail to support the psi hypothesis: They offer strong evidence against it."

Their overall goal was to develop and test a new way to empirically address the psi hypothesis using the technologies of modern cognitive neuroscience. They think the method has much to offer researchers who wish to investigate further the possible circumstances in which psi might or might not exist.

The SKEPTICAL INQUIRER asked two noted psychologists who frequently critique psi research about the Moulton/Kosslyn study. They praised it, but think psi supporters will readily argue around its significance.

"I think this is an interesting approach but find it difficult to think that this represents 'the strongest evidence yet obtained against the existence of paranormal mental phenomena,'" says Richard Wiseman of the University of Hertfordshire, U.K. "The procedure used in the study—one person looking at a picture and sending it to another—does not really map onto some of the types of telepathy experiments that proponents claim yield reliable evidence for ESP. In remote-viewing studies, for example, the receivers are usually very carefully selected on the basis of past performance, and in ganzfeld studies the receivers are placed in a mild altered state of consciousness. However, it is an innovative piece of work, and it would be great to see the MRI approach employed to test the claims made by parapsychologists."

James Alcock of York University, Toronto, was not too optimistic. "Given the way that psi has traditionally been defined, as a phenomenon that is not subject to the rules that we have discovered for the materialistic world, then this study does nothing to provide evidence *against* the existence of psi; it only fails to find evidence to support its existence. It is not different in principle from a physicist using high-tech equipment to detect an energy field during a psi experiment. While the physicist might find failure to detect any energy as 'strong evidence against psi,' failure to detect the field would not be surprising to parapsychologists, for this would simply serve to demonstrate that psi, if it exists, does not involve known energy fields. . . .

"You can't take a concept like psi, which is claimed to exist independently of the physical world—hence, precognition: no fall off of signal strength with distance, etc.—and then argue that you have found evidence against it because it doesn't fit with our knowledge of how the physical brain works!"

Kendrick Frazier is editor of the SKEPTICAL INQUIRER.

Anonymous vs. Scientology

In the last few months, a series of anti-Scientology protests have taken place worldwide. In an unpredictable sequence of events, the Church of Scientology has acquired a nemesis: the global, Internet-based "individual collective" known as Anonymous. Scientology is adept at silencing its lone critics, but how will the group tackle a sizeable, ubiquitous, and faceless foe?

Founded by author L. Ron Hubbard, Scientology purports to be a religion, but many call it a cult. But who or what is Anonymous? With enigmatic slogans such as "We are everyone, we are no one" and "We are Anonymous, we are Legion," Anonymous can be loosely defined as a large, noncentralized, global Internet community, mainly composed of highly computer-literate twenty-somethings.

The feud began in mid-January 2008 when a Scientology promotional video featuring an erratic and fervent Tom Cruise appeared on the Web site YouTube. As the video spread across the Internet, Scientology's infamous legal representatives sought the removal of the video, ostensibly as a violation of copyright law. Anonymous interpreted this as censorship and reputedly retaliated with a distributed denial of service (DDoS) attack against scientology.org. (Basically, this overuses the resources of a Web site, in effect closing it down temporarily—although it has been argued that the site experienced a legitimate increase of traffic seeking the Cruise interview.)

This incident was the catalyst, but the battle is more long-standing. The suppressive activities of Scientology conflict with the Anonymous ethos of free knowledge sharing and freedom of speech, and the two parties have clashed online—and in the courtroom—since the early 1990s.

Anonymous created Project Chanology, an initiative with the ambitious objective of "bringing down the Church of Scientology." Anonymous issued an ominous computerized message on YouTube reproduced in part below:

> Over the years, we have been watching you, your campaigns of misinformation, your suppression of dissent, your litigious nature, all of these things have caught our eye. With the leakage of your latest propaganda video into mainstream circulation, the extent of your malign influence over those who have come to trust you as leaders has been made clear to us. Anonymous has therefore decided that your organization should be destroyed. For the good of your followers, for the good of mankind, and for our own enjoyment, we shall proceed to expel you from the Internet and systematically dismantle the Church of Scientology in its present form.

The video became a "call to arms" for Anonymous members but sparked criticism from skeptics, including Mark Bunker of Xenutv.net and Andreas Heldal-Lund of Operation Clambake (xenu.net), both critical resources on Scientology. These seasoned activists were concerned that the group's methods could be misinterpreted and potentially detrimental to the cause. Heldal-Lund warned, "Attacking Scientology like that will just make them play the religious persecution card. They will use it to defend their own counter actions when they try to shatter criticism and crush critics without mercy. I believe we are better than this cult and, face to face using democratic tools, most free and thinking individuals will see through their charade." But Anonymous sees strength in numbers.

Members of Anonymous protest outside the Church of Scientology in San Francisco.

The "Internet War," fought on cyber fronts, soon became IRL (Internet slang for "in real life" or "not online"). February 10, 2008, became an Anonymous international day of protest. This date was significant as the birthday of Lisa McPherson, a Scientologist who died in 1995 while in the care of Church members. These "Scientology Raids," a successful marketing misnomer, were nonviolent protests that took place in almost one hundred cities worldwide, including London, Sydney, and New York. I attended the demonstration held outside the Church of Scientology in San Francisco to interview protesters for the online skeptical program The TANK Vodcast (tankvodcast.wordpress.com/).

This was an orderly, peaceful protest. After all, the San Francisco constabulary is accustomed to protests, and the public is sympathetic. Widely advertised online, this was not a covert operation, but many of the 200 attendees were. Anonymous by name and nature, the protestors wore costumes, suits, wigs, and masks to "protect their identities," fearing reprisal from the Church. Indeed, I witnessed Church members photographing the protest through windows and filming the event from the building rooftop. A few ex-Scientology members were in attendance too, including Lawrence Wollershein, founder of FACTnet.org, a resource for recovery from the abusive practices of religions and cults.

The protestors distributed informative flyers and carried posters with slogans such as "Scientology Hates Freedom of Speech"; "Truth is Not Hate Speech"; "Science Rules. Scientology Does Not"; "Bad Science Fiction Shouldn't Cost 360k"; "L Ron Hubbard: Prophet or Profiteer?"; "Scientology: It's only a Church on Paper"; and a youthful photo of Lisa McPherson beside an autopsy shot with the caption "She took a Free Personality Test."

Anonymous protested a range of issues and encouraged people to think critically about Scientology. In general, the protestors questioned practices rather than

beliefs. Their handouts questioned the tax exempt status of the Church, condemned abuses, secrecy, aggressive recruitment tactics, harassment of critics, litigiousness, and the irony of Hubbard as science fiction writer turned guru. Protecting freedom of speech was a major theme (playing devil's advocate, the DDoS attacks and the goal of "expulsion of Scientology from the Internet" contradict the free-speech message). The crowd chanted the motto "Knowledge is free, religion should be too" as Scientology was labeled a pyramid scheme that financially exploits its followers; protestors compared it unfavorably to Christianity, Judaism, and Islam, belief systems that openly share their tenets.

The protestors perceive Scientology as a cult, not a religion. If Scientology hadn't been popularly reframed from *religion* to *cult*, the demonstrations might be regarded as hate crimes. Signs urging drivers to "Honk if you hate Scientology" could be construed as vilification. Indeed, Scientology did play the victimized card, branding Anonymous members as "religious bigots," "cyber terrorists," and "domestic terrorists."

Project Chanology continues with more planned protests, petitions, and activities. So far, the protests have generated negative publicity for Scientology. However, the most negative publicity still comes from within the Church itself.

—Karen Stollznow

Karen Stollznow has a PhD in linguistics from the University of New England, Australia. She is a lecturer, researcher, and investigator of the pseudoscientific and paranormal living in the San Francisco Bay Area. She is associate editor of The Skeptic *(Australia).*

Sir Edmund Hillary, Explorer, Skeptic (1919–2008)

The conqueror of Mount Everest, Sir Edmund Hillary, who died January 11, 2008, was a man of many famous exploits. Less well known was a 1960 paranormal expedition he conducted in the best skeptical tradition.

Born in Auckland, New Zealand, on July 20, 1919, Hillary studied science and mathematics at Auckland University College, later adopting a summer occupation, beekeeping, which allowed him to pursue his winter avocation of mountain climbing. In 1939, he reached the summit of his first major mountain, Mount Olliver in the Southern Alps. In 1953, with Sherpa guide Tenzing Norgay, Hillary conquered the world's tallest peak, Mount Everest, for which he received worldwide acclaim, including knighthood. He subsequently climbed many other mountains, trekked overland to the South Pole (1958), and accompanied astronaut Neil Armstrong in a ski plane that landed at the North Pole (1985). In addition, he devoted much of his life to humanitarian efforts on behalf of the Sherpa people of Nepal.

Hillary gave other attention to his beloved Himalaya mountains, including becoming intrigued by persistent reports of the legendary man-beast of the region, the "Abominable Snowman" or Yeti. Evidence for its existence has proved as elusive as the creature itself. One famous photograph of a Yeti turned out to be that of a rock, while celebrated photos alleged to show the beast's footprints were determined to be in one instance those of a bear, and in another the trail of a mountain goat. (For more on this, see Joe Nickell's book, *Entities*, 1995.)

Hillary resolved to get to the bottom of the Snowman mystery. Among the purposes of a 1960–61 expedition financed by *World Book Encyclopedia* to study high-altitude effects on climbers and other aspects of mountaineering, meteorology, and glaciology, Hillary added Yeti-hunting. The expedition included mammalogist Marlin Perkins (the late, beloved host of television's *Wild Kingdom*) and various physiologists, zoologists, mountaineers, and journalists. Hillary was determined either to document or debunk the fabled creature. His team searched the region and reviewed evidence regarding the Yeti's existence.

The investigators came upon what appeared to be fox tracks in shaded snow, but where these led into a sunny area they had melted and thus become elongated into a semblance of large, human footprints. Hillary realized that this phenomenon of melting and enlarging of tracks—such as those of a bear or snow leopard—could account for many of the huge "Yeti footprints" that had been photographed. The team analyzed various alleged Yeti relics with consistently negative results. "Yeti fur" turned out to be from the rare Tibetan blue bear, and a "Yeti scalp" was a fur hat made from the goat-like serow.

The results of his investigation led Hillary to conclude that the whole concept of the Yeti was nonsense and that the creature existed only in legend. Monster buffs were angry, but Hillary's prestige and background gave him credibility among scientific-minded people. After all, says Daniel Cohen (in his book *Encyclopedia of Monsters*), "Sir Edmund Hillary, the great mountain climber, could hardly be criticized as being an armchair critic."

—Joe Nickell

Joe Nickell is CSI's Senior Research Fellow.

Sir Edmund HIllary, the first man to climb Mount Everest, died at age 88.

Darwin Day 2008: CFI/Los Angeles Stages Rare Reading of Steve Allen's Meeting of Minds

With an enthusiastic standing-room-only crowd of 180 attending, critically acclaimed actors brought to life four historical characters, including Charles Darwin, through a rare staged reading of an episode of Steve Allen's highly praised 1970s' TV series, *Meeting of Minds*. Held February 10, 2008, and staged in the round in the Steve Allen Theater at the Center for Inquiry/Los Angeles to celebrate Darwin's Feb. 12 birthday, the teleplay featured Darwin, Galileo, Emily Dickinson, and Attila the Hun discussing and debating their ideas with "Steve Allen" as the moderator.

Portraying the characters were Oscar nominee Robert Forster (*Jackie Brown*, *Medium Cool*) as Galileo; Dan Lauria (*The Wonder Years*) as Attila; Wendie Malick (*Just Shoot Me*) as Emily; Nicholas Hosking (Shakespearean actor) as Darwin; and Joseph Culp (*Apollo 13*) as Steve Allen. "Brilliant" was the word Jayne Meadows, Allen's widow, used to describe the actors. Meadows attended the show and spoke to the crowd afterward about the play that night and the struggle to bring *Meeting of Minds* episodes to TV. "And they performed with just one rehearsal!" she added incredulously.

Steve Allen's award-winning series was a labor of love first developed in 1959. However, it took a decade to reach a Los Angeles public TV audience and another seven years to reach national exposure in 1977. A total of twenty-four episodes were written by Allen, with some of the parts, such as Cleopatra, played and written by Meadows. Historians have acknowledged the accuracy of the ideas they imaginatively presented.

At one point during the play staged in Los Angeles, Emily Dickinson (Malick) comments to Darwin (Hosking) that she knows his theories were criticized and got him into trouble:

Emily: But what I don't understand is how such commonsense reasoning could have gotten you into such incredible difficulty.

Darwin: (*He laughs.*) But, my dear woman, the real trouble did not come about until after I had presented to the world the idea that the common ancestry of all living things includes *man*.

After the hour-long play, CFI staff popped champagne and passed out birthday cake to the crowd and actors. Jim Underdown, executive director of CFI/L.A., who made remarks about Darwin Day to the crowd, led the champagne toast to Charles Darwin's 199th birthday at the reception.

This revival of *Meeting of Minds* was the brainchild of filmmaker Frank Megna, who directed the play, and Bob Ladendorf, CFI chief operations officer who co-produced the play with Diana Ljungaeus, an award-winning journalist, screenwriter, and producer.

Darwin Day is an international celebration of science and humanity. CFI Centers and Community groups hosted speakers and programs for children this year. Other groups held discussions or showed films about evolution. Last year for Darwin Day, Megna and Ladendorf co-wrote and staged an original one-act play, which is under further development, about the Scopes "monkey trial" and 2005 Dover Intelligent Design trials, and in 2006 more than sixty readers, including celebrity writers, filmmakers, and artists, read aloud the entire *Origin of Species* at the Center for Inquiry/L.A.

With nearly half of Americans still doubting evolution, next year's 200th anniversary of Darwin's birthday will be a great opportunity to demonstrate the science of evolution worldwide.

—Bob Ladendorf

Bob Ladendorf is the chief operating officer of CFI/L.A. As a freelance writer, he co-authored "The Mad Gasser of Mattoon" in

Actress Jayne Meadows starred in many of her late husband Steve Allen's episodes of *Meeting of Minds*. Photo credit: Rouslan Ovtcharov

Critically acclaimed actors portrayed historical characters who discussed each other's ideas and lives. They include (from left): Nicholas Hosking as Charles Darwin; Dan Lauria as Attila the Hun; Wendie Malick as Emily Dickinson; and Robert Forster as Galileo. Not pictured is Joseph Culp as Steve Allen. Photo credit: Rouslan Ovtcharov

IGNITE THE ADVENTURE

The New Future Fund

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- **Outreach and education: publishing, media relations, personal outreach, and more**
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Toni Van Pelt, Paul Kurtz, and Ron Lindsay (standing); Lawrence Krauss, David Helfland, and Nobel Laureate Paul Boyer (seated) introduced the Declaration in Defense of Science and Secularism at the inaugural press conference of the Center for Inquiry/Office of Public Policy in Washington, D.C.

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Scientists say *Nullo Modo* (No Way) to Pope

When Marcello Cini, professor emeritus of physics at the University of Rome La Sapienza, heard that Pope Benedict XVI was the invited speaker at La Sapienza's academic year inaugural ceremony on January 16, 2008, he wrote a remonstrating letter to the university's rector, Renato Guarini. Professor Cini also sent a copy to one of Rome's major newspapers, *il manifesto*, which published it on November 14, 2007. The letter listed a number of reasons why the pope was seen by many as a symbol antithetical to the mission of the university.

Historically, the honor of opening La Sapienza's school year is given to academics, not to religious leaders or politicians. La Sapienza was founded as a Catholic college by Pope Boniface VIII in 1303, but it has been a secular institution since 1870. Cini raised the objection that inviting the pope to open the academic year conferred the appearance of continuing papal involvement in the affairs of the university. The letter also criticized the pope's public statements supportive of Galileo's excommunication, intelligent design, and the existence of reasoning higher than rational thought.

La Sapienza physicist Carlo Cosmeli read Cini's letter in *il manifesto* and agreed that the symbolism of having Pope Benedict XVI open the academic year would besmirch the university's persona. Cosmeli composed his own letter of protest to the rector. This letter asked the rector to withdraw the invitation, as the pope's position on science "offends and humiliates us." The letter was signed by sixty-seven members of La Sapienza's science faculty and personally delivered to the rector on November 20. "The letter was delivered to Renato Guarini personally and with discretion," wrote Giorgio Parisi, the distinguished theoretical physicist, in an e-mail on January 26, 2008. Parisi is one of the letter's signatories. Nevertheless, a copy of the letter found its way to the press, fueling the public controversy.

Cini's letter in *il manifesto* served to herald the pope's visit to La Sapienza to the rest of Rome as well. Many students and others not associated with the school objected fiercely to the Vatican's meddling in Italian politics on the issues of homosexual and reproductive rights. These groups planned demonstrations to publicize their objections to Vatican policies at Internet speed. The addition of gay and reproductive rights to the protest radicalized opposition to the pope's appearance at La Sapienza.

Rector Guarini's response was the issuance of a campus-wide ban on all demonstrations during the pope's visit. The students countered. They occupied the rector's offices, hanging banners of protest out the windows. Finally an agreement was reached between Guarini and the students. The students would be allowed to demonstrate but only in a specified area away from the ceremonies, and amplified sound was prohibited. In addition, only those holding university IDs would be allowed to enter the school during the pope's presence, constraining the protest to students and faculty.

Finally, the Vatican gave in. In its ANSA press release on January 15, 2008, it stated: "Following the widely noted vicissitudes of recent days . . . it was considered opportune to postpone the event."

Pope Benedict XVI earned the nickname "God's Rottweiler" while a cardinal, and he has worn the sobriquet well as pope. For example, after giving a speech at Rosenburg University in 2006 that inflamed the Muslim world, the pope made a trip to Turkey. Mobs of angry Turks were apparently less threatening to the pope than La Sapienza's physicists.

Politicians, such as the president, prime minister, and mayor of Rome, as well as Vatican spokespersons, condemned the La Sapienza faculty and students who campaigned against the pope's appearance at the school. Accusations were made that scientists and secularists were censuring His Holiness because the message he carried was too threatening—the pope had to be silenced! The vicar of Rome, Cardinal Camillo Ruini, called for Italians to show solidarity with the pope by coming to the Vatican to pray on Sunday, January 20, and they did. Three hundred thousand of the faithful crowded into Vatican Square chanting support for the pope and

A student shouts slogans against Pope Benedict XVI at La Sapienza University in Rome, Italy. Pope Benedict XVI cancelled a visit to Rome's La Sapienza University following angry protests from science professors and students. [Photo via Newscom]

decrying those who would not allow him the constitutional right of free speech. Cini, author of the letter that started it all, said: "The pope now plays the victim."

What a coup, but why? Italian politics is better understood if the country is viewed as two countries, not as one. One country was created by the unification of the Italian independent states in 1870. The second country is the Vatican—an almost two-thousand-year-old remnant of the Holy Roman Empire. While the rest of Europe won autonomy from the Holy Roman Emperor after the Thirty Years War in 1648, Italy has not been able to completely break free. Since World War II, Italy has endured rapidly changing weak governments, a problem many blame on papal meddling in politics. A brilliantly insightful analogy by Peter Popham, published in Britain's *The Independent* on February 26, 2007, puts it well:

> Imagine that Hitler did not die in his bunker in 1945 but instead cut a deal with the new West German government, giving him continued sovereignty over a small patch of Berlin—and continued intellectual hegemony over the millions he had brainwashed during the previous decade. How could a new German dispensation function with this incubus at the heart of the state, second-guessing its every move, checking and trumping every effort to

dismantle its ideology?

Only ten months before the pope was invited to La Sapienza, the government of Prime Minister Romano Prodi was almost toppled because of the position that it took against the Vatican. Prodi restored his coalition government only after abandoning his support for a law allowing civil unions (a law found in all other European countries except Poland).

As the La Sapienza controversy hit the headlines, Prime Minister Prodi's government was again teetering on the edge of collapse. This time a Vatican-backed revision restricting Italy's abortion law was at issue. The crisis occurred when senator Paloa Binetti, from one of Prodi's supporting political parties, split from the other party members by casting a no-confidence vote for Prodi. Asked why, Binetti stated, "I do not support party discipline on such matters." As reported in the *New York Times* on January 5, 2008, Binetti is a celibate senior member of Opus Dei who openly admits to wearing a cilice. A cilice is similar to a piece of chain link fence with added spikes. It is worn around the thigh as a painful reminder of Christ's suffering.

Binetti's defection from the majority coalition was an insurmountable blow to the prime minister, and on January 24, 2008, Romano Prodi resigned. The collapse of the government was front-page news in Italy's newspapers, which were still reporting on the three hundred thousand who turned out to support the pope in his conflict with the scientists at La Sapienza. A philosophically cognizant reader could not ignore the common thesis pervading these stories. The participants and theaters keep changing, but the heart of the drama is still Galileo Galilee standing trial before his accusers.

—Frank Reiser

Frank Reiser is in the department of biology at Nassau Community College, Garden City, New York.

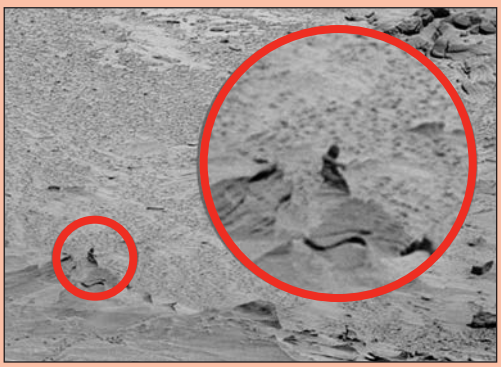
NASA's Mysterious 'Man on Mars' Photo

The idea that there may be life on Mars has been around for centuries, but the theory got a boost from photos taken by the NASA robot Spirit. The images, taken in 2004 and released in January 2008, show a vaguely humanoid figure amid rocks on the Martian landscape. It's not clear from the image what the scale is, and some believe it is a human. The "man on Mars" suggestion started out as a joke on a blog but soon became an international story as conspiracy theorists took hold. A headline in U.K.'s *Daily Telegraph* read, "Bigfoot on Mars? NASA Captures Alien Figure." However far-fetched the explanations, the photo does show an image that could be interpreted as a human form. But what is it?

It's hard enough to accurately recognize figures and faces across a room. Mars, depending on when you measure it, is about 35 million miles away. The best telescopes aren't of much help in determining surface features, and that's why NASA sent robots with cameras to Mars.

The reason many people see a figure on the Martian landscape is the same reason that people see faces in clouds, Rorschach blots, and coffee stains. This phenomenon, called pareidolia, is well known in psychology, and it is the cause of many supposedly mysterious and miraculous events (including the famous "Jesus in the Tortilla"). Examples are all around us; in fact, if you have a New Hampshire state quarter, you have an example of pareidolia in your pocket or purse (take a look).

Strong evidence for this psychological explanation lies in the fact that the Spirit image does not look like Martian life (since we don't know what life on Mars looks like), but instead resembles life here on Earth—specifically human life. The image is the result of human interpretation. If you look at the entire image (not just the close-up), you will find several rocks and features that resemble non-human Earth life, such as armadillos and snakes. For all we know, life on Mars could look exactly like the rocks and boulders that Spirit has been photographing for years.



NASA'S Mars Exploration Rover Spirit captured this westward view from atop a low plateau where Spirit spent the closing months of 2007. Several bloggers and other enthusiasts have pointed to a tiny structure (red circle) on the Martian surface as a human figure and thus evidence of life on Mars. Credit: NASA/JPL-Caltech/Cornell University

This is of course not the first time that NASA images reportedly showed evidence of Martian life. Richard Hoagland claimed that 1976 photographs of the Cydonia region of Mars showed a human-like face and was clear evidence of aliens. The "Face on Mars" was eventually disproved by later Mars Global Surveyor photographs of the same region in far higher resolution than was possible in 1976.

According to astronomer Phil Plait of the Bad Astronomy Web site, if the image really is of a man on Mars, he's awfully small: "Talk about a tempest in a teacup! The rock on Mars is actually just a few inches high and a few yards from the camera. A few million years of Martian winds sculpted it into an odd shape, which happens to look like, well, a Bigfoot! It's just our natural tendency to see familiar shapes in random objects."

Even though logic and science suggest that the image is of a rock and not an animal, UFO buffs and conspiracy theorists will continue to speculate. Wouldn't it be ironic if the figure on Mars was actually a man in a Bigfoot costume?

—Benjamin Radford

Benjamin Radford is managing editor of the SKEPTICAL INQUIRER.

How to Study Reincarnation: Guidelines for Research

Is there a way to empirically study claims of reincarnation to satisfy scientific standards, producing results that might be accepted by a broader segment of the scientific community? Reincarnation researchers, such as the late Ian Stevenson and others, have long tried to examine the veracity of the testimony of children who seem to have some knowledge of a previous life.

But there are many weaknesses with the current methods used by parapsychologists to study reincarnation claims even though they produce a wealth of information. Most cases, for instance, emanate from countries where there is a strong cultural belief in reincarnation. Separating out the effects of cultural belief and experimenter expectation to receive an untainted interpretation is extremely difficult.

Two researchers have now collaborated on a paper published in the December 2007 *Journal of Consciousness Studies* (Vol. 14, No. 12) that suggests a set of guidelines for conducting reincarnation research. The paper, "Setting Criteria for Ideal Reincarnation Research," is noteworthy not just for its specific suggestions but for the fact that it follows up on frequently heard suggestions by skeptics and others: in such controversial research areas a doubter and a believer should together devise formal research methods and agree ahead of time on how experiments should be conducted.

One author, William Bernet, director of the Vanderbilt University Forensic Psychiatry unit, tells the SKEPTICAL INQUIRER that he characterizes himself as a "moderate skeptic" and his co-author, Jonathan Edelmann (Oxford, theology), as a "moderate believer in reincarnation." Bernet thinks their paper is a good example of how a believer and a skeptic can collaborate together.

The protocols they suggest are too detailed to present here except in outline, but they involve four distinct phases:

In the first phase, a videotaped interview by a trained professional must be made of the child's testimony. Specific statements about the purported previous life must be elicited (for example, "How old was your younger brother?"). These statements must be empirically verifiable and specific enough to rule out chance or just common knowledge.

"A strong case for reincarnation would require that each and every phase of the research were conducted without flaw."

In the second phase, a group of trained professionals must look at the data collected from the child and make a critical evaluation of the interview as well as of all possible information about the life history of the child. This group must be trained in psychiatric interviewing to discover any discrepancies in the interview. A full analysis of the interview, including the possibility of either normal or paranormal knowledge reception, should be presented. This group must also prepare a list of twenty descriptors that can be checked and a definition of a "hit."

A third group of investigators must be sent to the location of the child's supposed previous life to investigate data. This group has no access to the child or his recorded statements, preventing any influence on their work. They conduct interviews and take photographs. They must also visit a nearby control household, designated by the second group, without knowing which house is the control and which is the "real" one. Say Edelmann and Bernet: "The criterion for success is not that the child scored 12 hits out of 20 descriptors, but that the number of hits for the designated household and village is significantly higher than the number of hits for the control household and village."

In the fourth phase, the project directors must collect and assess the findings from groups A, B, and C. To start with, they have to determine whether the first group conducted a proper interview. They determine whether the second group adequately addressed all possible natural sources of information. They decide whether the third group collected the relevant information from the alleged past-life site and the control site. Then the results must be analyzed statistically. The authors give numerous specific guidelines and formulas for that analysis.

"A strong case for reincarnation would, on this model, require that each and every phase of the research were conducted without flaw," say Edelmann and Bernet.

"Such a result has yet to emerge," they write, "for none of Stevenson's, [Erlendur] Haraldsson's, or [Antonia] Mills' cases involve this large collaborative effort. But the work by these investigators provides a rationale for further research into reincarnation" and, they say, "has implications for our understanding of mind, memory, and consciousness."

"Although ideal reincarnation research has not yet occurred," Edelmann and Bernet conclude, "it is in principle

Bones of Contention

Missions Incompatible: New Creation Museum, Venerable Carnegie Museum a Stark Contrast

EDWARD H. JONES

"Hooey," declares the man on the phone from his office in the massive stone building blackened by a century of industrial progress. "For them to say that there is scientific evidence for a biblical account of the way the world was formed and the way life on earth evolved through millions of years is complete and utter hooey." The man making the dismissive comment is Christopher Beard, curator and section head of vertebrate paleontology at the Carnegie Museum of Natural History in Pittsburgh. The "them" he refers to is the controversial new Creation Museum in Petersburg, Kentucky. The museum is so named because it presents natural history and the origins of the earth with a decidedly biblical, creationist point of view. The modern facility, which opened on Memorial Day 2007, is the brainchild of Australian-born creationist speaker and author Ken Ham. Ham sees the Creation Museum as an instrument for proclaiming that the Bible is the supreme authority in all matters. Beard sees it as a disservice to the state and surrounding communities and as one cause of scientific illiteracy in this country.

An imposing replica of *Diplodocus carnegii* stands guard in front of the equally imposing Carnegie Museum of Natural History. The namesake for both the dinosaur and the museum was the wealthy industrialist Andrew Carnegie, who in his day was said to be the richest man in the world. In establishing the museum in 1895, Carnegie sought to help people improve their lives through educational and cultural experiences. Three hundred miles to the southeast in Petersburg, Kentucky, a replica of a *Saltasaurus* stands guard in front of the Creation Museum. According to the Creation Museum's online brochure, Ken Ham intends the museum to be a resource for information and education to pave the way to a greater understanding of the tenants of creation. Accordingly, both the Creation Museum and the Carnegie Museum consider themselves legitimate museums of science, as evidenced by the long-necked, prehistoric behemoths displayed in front of each. Their missions, as each makes perfectly clear, however, are about as different as bibles and bones.

On July 4, 2007, the Creation Museum unveiled its newest exhibit, the Dinosaur Den. In a press release, the Creation Museum explained that over the past decade its staff has been collecting items such as dinosaur bones and eggs, many of which are now featured at Dinosaur Den, along with sculpted dinosaur displays. "We are hoping that people of all ages will enjoy the dinosaur displays and learn that the science of paleontology supports biblical creation," said Ham in the release.

In a similar vein in November of 2007, the Carnegie Museum unveiled its new exhibit called *Dinosaurs in Their Time*. The exhibit marked the 100th anniversary of the museum's original Dinosaur Hall. "[It's] about the biggest thing we've done since Andrew Carnegie founded the museum," says Beard by phone. The Carnegie epitomizes the quintessential natural history museum: staid and traditional with a worldwide reputation. "We're a global resource," says Beard. In stark contrast, the Creation Museum is a recent phenomenon that is not afraid to flout convention to reveal what it considers the biblical basis for the origins of the earth. "There will be those who will sneer," claims the Creation Museum's online brochure, "but some will be challenged to think."

So how can these two seemingly different museums both profess to contribute to the advancement of scientific thought? Perhaps the answer ultimately lies in how each museum looks at science.

The Creation Museum bills itself as a $27 million walk-through-history museum "where visitors can see real dinosaur bones and exceptional fossils," the kind that would typically be found in a first-class museum of natural history. "They've got some awesome fossils, and we've got some awesome fossils," says Creation Museum spokesperson Georgia Purdom during a phone interview. Although the fossil collections

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might suggest that these two museums are alike, their mission statements speak otherwise.

It comes as no surprise to learn that as one of the world's prestigious natural history museums, the Carnegie's mission includes conducting scientific inquiry that "creates knowledge and. . . builds strategic collections to preserve evidence of that knowledge." As Beard explains over the phone, "the Carnegie has one of the best, if not *the* best, collections of late Jurassic dinosaurs in the world." But as a traditional museum of natural history, the Carnegie also seeks to engage the public in "the excitement of scientific discovery about the evolutionary. . .processes that shape the diversity of our world and its inhabitants." The Carnegie's new dinosaur exhibit is expected to do just that. "It's going to be a huge impact, not just here in Pittsburgh, but around the country, and even internationally," says Beard.

By comparison, the Creation Museum contends it will "counter evolutionary natural history museums that turn minds against Scripture—and Jesus Christ, the Creator of the universe." The Creation Museum's mission includes equipping Christians "to better evangelize the lost through a combination of exhibits, research, and educational presentations that will uphold the inerrancy of the Bible." "Our mission is obviously to see people come to a relationship with Jesus Christ," adds Purdom, who holds a PhD in molecular genetics. According to the Web site of Ken Ham's Bible-defending ministry called Answers in Genesis, visitors to the Creation Museum will discover how science actually confirms biblical history and that the Book of Genesis is the true history book that details the origins of the earth.

Beard sees it differently. "It's really too bad that the people who opened this museum are putting out so much antiscientific propaganda and reinforcing ideas that are out there that just contribute to the problem of lack of scientific literacy in this country," he explained by phone. He says that the evidence that allegedly supports the biblical account of natural history was either refuted decades ago by science or doesn't exist at all. "They've made up their minds a long time ago before they actually evaluated the fossil record and what it tells us about the history of life on earth," he says. "They present their forgone conclusion as if it were somehow supported by facts."

Christopher Beard, head of vertebrate paleontology at the Carnegie Museum of Natural History in Pittsburgh.

However, Purdom asserts that it isn't so much the data that's at issue, it's the starting point. She says that everybody starts out with some kind of assumption, some sort of understanding of how the world works, whether you believe that the Bible should be the starting point or whether you believe that human reasoning should be that starting point. Everybody's going to approach evidence with assumptions. "We're all looking at the same evidence," she says, "Whether you are a creationist or an evolutionist . . . it's just a different starting point."

Beard thinks otherwise. "What kind of science starts by assuming that the Book of Genesis is accurate?" he says. "I don't assume that anything is accurate, including Charles Darwin's *Origin of the Species,*" he adds. "If you literally believe that every single word in the Bible is . . . infallible, then you're out of the mainstream . . . with most of Christianity in the world today." What science teaches is the result of years, decades, and in some cases even centuries of observation, experimentation, and reassessment of data, he contends. "We will continue to fight the good fight against the forces that hold back scientific progress," Beard vows. "These people are not convincing any scientists," he says. Instead, "they are convincing the uninformed members of the public, and that

INVESTIGATIVE

Eucharistic 'Miracles'

Did an incident that reportedly occurred in Turin, Italy, in 1453 (unrelated to the famous "shroud" later enshrined there[1]) offer unimpeachable evidence of the supernatural? How else can one explain the wonderful story of "The Miracle of Turin" and other Eucharistic miracle claims?

Introduction

According to her book *Eucharistic Miracles*, Joan Carroll Cruz (1987, xi) states, "The greatest treasure in the Catholic Church is, without question, the Holy Eucharist—in which Jesus Christ humbly assumes the appearance of bread." In Catholicism, the Eucharist is the sacrament in which the bread and wine consumed at Communion in remembrance of Jesus' Last Supper are, by the miracle of "Transubstantiation," changed into the actual body and blood of Christ, whence they are known as the Blessed Sacrament (Stravinskas 2002, 139, 302, 734). In other words, Catholics take literally Jesus' statement regarding the bread: "Take, eat: this is my body," and regarding the wine, "Drink ye all of it; for this is my blood of the new testament, which is shed for many for the remission of sins" (Matt. 26: 26–28).

Figure 1. Painting of "the Miracle of Turin" by Bartolomeo Garavaglia in the Church of Corpus Domini, Turin, Italy (Photo by Joe Nickell).

In contrast, Protestants understand the story (given in various other versions: Mark 14: 22–25; Luke 22: 19, 20[2]; John 6: 48–58; and 1 Cor. 11: 23–26) as symbolic of Jesus' dying for mankind. Indeed, it is an evolved form of the Jewish Passover ritual (Dummelow 1951, 710). Religious writers Marcus J. Borg and John Dominic Crossan (2006, 192–194) consider the story, together with the entire Easter narrative, as a parable (a simple story with a moral, whether factually true or not).

Eucharistic Miracles

Nevertheless, Transubstantiation is a dogma of Catholicism and, from at least the eighth century, numerous "Eucharistic miracles" that seem to verify its reality have been reported. In addition to a few dozen accounts in Cruz (1987), many more are related in *Legends of the Blessed Sacrament* (Shapcote 1877), and no fewer than 142 are featured in a Vatican international traveling exhibition titled the "Eucharistic Miracles of the World," which I was able to view in Lackawanna, New York, on September 20, 2007. (The exhibition consists of display panels, otherwise available on a Web site [Eucharist 2007].)

Some Eucharistic miracle tales (Cruz 1987, 187–188, 191–192, 208–209) seem to be little more than derivations of biblical stories. For example, the account of a boy having eaten communion bread which keeps him from harm inside a fiery

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furnace evokes the story of Shadrach, Meshach, and Abednego in Daniel (3: 10–30); the Holy Sacrament's curing of a demoniac recalls Jesus' similar feat in Mark (5: 1–16); and the multiplication of some twenty consecrated wafers—or Hosts—into enough to serve almost 600 people obviously recalls Jesus' miraculous feeding of the multitude of 5,000 with only "five loaves, and two fishes" (Matthew 14:15–21). (Interestingly, the multiplying Hosts was accomplished by St. John Bosco, 1815–1888, who, in his youth, had been a magician [Cruz 1987, 208]!)

Many of the Eucharistic miracle stories have a suspiciously similar plot, which suggests derivation. For example, at least three stories—from Lanciano, Italy, eighth century; Regensburg, Germany, 1257; and Bolsena, Italy, 1263—concern a priest who had doubts about the reality of transubstantiation. When he spoke the words of Consecration, the Host was suddenly transformed into flesh and/or the wine became visible blood (Cruz 1987, 3–7; 59–62).

As another example, several tales—from Alatri, Italy, 1228; Santarem, Portugal, early thirteenth century; and Offida, Italy, 1280—feature a woman who kept the Host in her mouth so she could make off with it and, as instructed by some occultist, transform it into a love potion. Subsequently, the Host was turned into flesh (Cruz 1987, 30–37; 70–83), and in one instance it also issued a mysterious light (Cruz 1987, 38–46).

At least two anti-Semitic tales—one from Paris, France, 1290; and one from Brussels, Belgium, 1370—involve a Jew or Jews illicitly acquiring a consecrated wafer and stabbing it with a knife, whereupon blood spurted forth in triumph over their mocking disbelief (Cruz 1987, 63–65; 112–122).[3] In the latter tale there are even conflicting accounts of the Jews' fate: one says they were burned at the stake, the other that they were banished from the area. Such *variants*—as folklorists call them—are a "defining characteristic of folklore," since oral transmission naturally produces differing versions of the same tale (Brunvand 1978, 7).

Turin 'Miracle'

The story of "the miracle of Turin" begins just before the middle of the year 1453 at a church in Exilles (then in the French Dauphinate), according to a parchment which I personally examined at the Turin city archives (Valle n.d.). Reportedly, some men (two soldiers, in popular legend [Cruz 1987, 145]) had come from a war between the French Savoys and the Piedmontese, pillaged a church, and then loaded a sackful of plunder—including a silver reliquary with a sacred Host—upon a mule. They made their way via Susa, Avigliana, and Rivoli to Turin, but after the beast passed through the city gate, it halted in front of the church of San Silvestro and fell to the ground. Out of the pack tumbled the Host—"the true body of Christ"—and it miraculously ascended into the air, shining "like the sun." The bishop, Ludovico Romagno, was summoned along with the clergy, whereupon they discovered the reliquary on the ground and "the body of the Lord in the air with great Radiant splendor." The bishop knelt and brought out a chalice into which the Host descended, thence being transported to "the doorway of the Cathedral."

The parchment, signed only by a ducal official, nevertheless lists the names of several witnesses and notes that "after completion of the new cathedral" the Host is to rest therein and to be the subject of an annual octave (an eight-day event) in commemoration of the "miracle" (Valle n.d.).

Unfortunately, there are problems with the document, although it is certainly consistent with a parchment of the fifteenth or early sixteenth century.[4] Significantly, it is undated and merely bears in the heading the date of the reported event: "in the year 1453 on the 6 of June, a Thursday." Actually, the sixth was a Wednesday, only one of several indications that something is amiss. Another problem is the reference to the anticipated completion of the "new cathedral," presumably that of St. John the Baptist, which was not built until 1491–98 (Turin 2007).

Everything about the document indicates it is not original, including the fact that another undated one—with a similar text (including the erroneous "Thursday")—is known. Indeed, it is the latter whose text is reproduced in the official booklet published with the imprimatur of the Metropolitan Curia of Turin. However, this document is noted as "presently missing" and—lest it be thought to have been the original—is described as a "sixteenth-century text" (*Il Miracolo* 1997, 55). Moreover, although the two documents include many similarities, there are differences in wording and detail. For instance, the published document specifically mentions the Cathedral of St. John the Baptist by name, and the respective lists of witnesses' names show evidence of garbling. (For example, "Michaele Burry" is given in the parchment versus "Michel Muri" in the published document; only one of the eleven names is exactly the same, and the published document omits a name. The list in Cruz [1987] is different still.)

Despite the late, differing versions and the apparent lack of a true original—all of which inspires skepticism—the copies themselves nevertheless indicate there was, at least at some point, a narrative and a list of names of alleged eyewitnesses to some occurrence. But what was it?

An Explanation

The texts suggest that it may well have been some celestial event, the supposed Host being described as "in the air with great Radiant splendor" and "shining like the sun" (see figure 1). The accounts say the event occurred "at hour 20" (Valle n.d.; *Il Miracolo* 1997, 55), but the printed text has an editorial insertion clarifying that it was "between the hours 16 and 17"—i.e., between four and five o'clock in the afternoon (*Il Miracolo* 1997, 55). Therefore the duration was apparently less than one hour. On the other hand, the event obviously lasted long enough for residents to fetch the Bishop and clergy, so it was too long for, say, a meteor.

That it was described as "shining like the sun" suggests to me it could have been a phenomenon known as a "mock sun" (or "sun dog"), that is, a parhelion. Parhelia can appear as very bright patches in the sky and are among the various ice-crystal refraction effects that include halos, arcs, solar pillars, and other atmospheric phenomena (Greenler 1999, 23–64).

I posed the question of the mystery occurrence to Major James McGaha (USAF, retired), who is not only an experienced pilot and noted UFO expert but also director of the Grasslands Observatory in Tucson, Arizona. He conducted a computer search of the sky for the place, date, and time of the occurrence. He found nothing of an astronomical nature that might have caused such an effect. (For example, there was no conjunction of planets, and the moon—a new moon—would have been invisible [McGaha 2008].)

He agreed with my suggestion that a parhelion-type phenomenon could be consistent with the "miracle of Turin." That is especially likely in light of the celestial object being reported as "over the surrounding houses" and "shining, as a second sun" ("Eucharistic" 2007)—an apt description if the phenomenon were indeed a mock sun. A parhelion could well last for the duration reported and would be most likely to appear when the sun was relatively low in the sky, observed McGaha (2008).

He considered one other possibility given that there was a question of the date. If the event did occur on June 6 but three years later, in 1456, the celestial object could convincingly be identified as Halley's Comet.

In any event, what might have happened is that the witnessing of a genuine, sensational occurrence was seen as miraculous—a "sign"—by superstitious folk and clergy, the latter interpreting it as the radiant body of Christ in the sky. This could have prompted the Bishop to hold aloft not only a chalice but also a Host, and as the phenomenon soon ceased to be visible, the belief was that the celestial light was absorbed by the wafer. According to this scenario, it was this "miraculous" Host that was displayed. (It was thus kept until 1584 when the Holy see ordered it consumed so as "not to oblige God to maintain an eternal miracle by keeping the Host always perfect and pure" (qtd. in Cruz 1987, 147).

This celestial incident, witnessed by various persons, might then have been grafted by the process of folklore onto a somewhat similar tale, like one set in Paris in 1274 (Cruz 1987, 63). Or it could have been confabulated—in the manner of the Roswell UFO crash myth (McAndrew 1997)—and enhanced by faulty perceptions and memories, together with the impulse to create a pious legend.

Such religious legends are often called *belief tales* because they are intentionally grafted "to give credence to folk beliefs" (Brunvand 1978, 106–108). Indeed, Cruz (1987, 145) states revealingly that "At the time of the miracle of Turin, the faith of the people had grown feeble, and it is thought God wanted to give a sign to arouse them from their apathy." The miracle, she states, "effected the desired change."

Arguing in favor of this hypothesis, I think, is the allegorical nature of the Turin narrative—a dramatic tale in its own right, and an even more profoundly Christian one if seen as allegory of the life, death, and resurrection of Jesus. Consider, for example that similar to Jesus' emerging from exile (Matthew 2: 13–15), in the Turin-miracle narrative the Corpus Domini ("Body of Christ") is placed on a mule and led from Exilles into Turin (which is to become known as "the city of the Holy sacrament" [*Il Miracolo* 1997, 32]). Jesus' Last Supper (Matthew 26: 17–30) is evoked by the wafer of communion bread, which has been spilled.

This (tradition says) happened between two robbers, like Jesus' crucifixion, which occurred between two thieves (Matthew 27:38). And just as Jesus bodily arose from his tomb (Matthew 28: 1–7) and was "carried up into heaven" (Mark 24:51), the "Body of Christ" emerged from its reliquary (a container for holy remains) and ascended into the sky, radiant like the sun, as Jesus came to be (says John 9:5) "the light of the world." The subsequent descent of the Holy Host into the chalice obviously symbolizes the gift of the Eucharist to Christianity—a theme common to all of the Eucharistic "miracle" tales.

Acknowledgments

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Notes

1. For an updated discussion of the Shroud of Turin see Nickell 2007, 122–179.

2. Another version of Luke is in Codex Bezae (Price 2003, 298).

3. In the first instance the man is not stated to be a Jew, but it is implied by his being a "non-Christian" and stereotypically, a "pawnbroker," and is further indicated by the similar tale specifically involving Jews assembled in a synagogue.

4. Examination with a 10x Bausch & Lomb illuminated coddington magnifier reveals that the parchment's text was penned with a quill in an ink that has the appearance of an age-browned (oxidized) iron-gallotannate variety and is in an italic hand known as *cancellaresca*—i.e., "chancery" script—because it was widely disseminated by scribes of the Papal Chancery in the fifteenth and sixteenth centuries (Whalley 1984, 22, 41, 181; Nickell 2003, 123, 131, 140).

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Creationist Peer Review

Finally, creationists have a peer-reviewed journal. Answers in Genesis (www.answersingenesis.com), the same nonsensical outlet that has given us Ken Ham's Creation Museum, recently launched a "peer reviewed" "technical" journal, called, of course, *Answers Research Journal*. The idea, as we learn from the journal's Web page, is to provide an outlet for "interdisciplinary scientific and other relevant research from the perspective of the recent Creation [*sic*] and the global Flood within a biblical framework." See, apparently "there has been a pressing need for such a journal," because "people want to know they can trust what is published on the Internet," and Answers in Genesis "can give you absolute assurance that the papers we will be publishing in *Answers Research Journal* are of the highest scientific and theological standard." Of course, a high theological standard is a bit of an oxymoron, but let's not quibble on the details.

The editor of this prestigious new arrival on the scientific scene is Andrew A. Snelling, who is so unknown and apparently insecure that he puts "B.Sc. (Hons)" after his name, before "Ph.D." (in geology, from the University of Sydney). The esteemed (by some) Snelling has published an astounding twenty-four technical papers in thirty years of research, an average that would not get him tenure at the local community college. Accordingly, in 1998 Snelling had to content himself with joining the "faculty" of the Institute for Creation Research in California. Nevertheless, in the same year he won a whopping three prizes at the Fourth International Conference on Creationism for three technical papers he submitted (my hunch is that there were only three papers submitted to the conference, but I could be wrong). We are not told who is on the editorial board of *ARJ*; perhaps the distinguished scientists who agreed to oversee the peer-review process were afraid of losing tenure at their institutions. The downside of putting secular fascists in charge of American universities!

Arguing, teaching, and doing research means that one accepts the rule of rational, evidence-based discourse. And yet creationists want to have it both ways and promptly retreat behind the all-encompassing shield of faith when things get rough.

I simply couldn't wait to start reading about all these new, exciting scientific discoveries informed by a Christian perspective, and I wasn't disappointed. The first volume of *ARJ* features the proceedings of the Microbe Forum, where we learn that "for many years the roles of microbes as part of God's wonderful design have been neglected. Perhaps it is because many people associate microbes as the cause of death, disease, and suffering." I think these many people have a point: what the heck was God thinking? Well, abstracts presented at the Forum begin to tell us, as titles include such gems as a "Creationist Model of Bacterial Mutations," "Creation Microbiology and the Origin of Disease," the highly technical-sounding "Viral/Bacterial Attenuation and Its Link to Innate Oncolytic Potential: Implications of the Perfect Original Creation in the Beginning," and my favorite: "Pathogenicity Tools and Mycotoxins: In the Beginning or after the Fall?"

The rest of the first issue of *ARJ* is not to be neglected either. For instance,

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CREATIONIST PEER REVIEW
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Just Like Jedi Knights (If Only)

Leon Jay (center) tries to knock down Luigi Garlaschelli (left) with a *qi* punch, while Massimo Polidoro (right) looks on.

"How would you like to be knocked out by a karate master for a National Geographic documentary?" This is the strange request that my friend and colleague Luigi Garlaschelli, a chemist at the University of Pavia, and I received some time ago by the producers of the National Geographic Television series *Is It Real?*

Massimo Polidoro is an investigator of the paranormal, author, lecturer, and co-founder and head of CICAP, the Italian skeptics group. His Web site is www.massimopolidoro.com.

We had already collaborated with the show for other episodes on miracles, human magnets, psychic detectives, and stigmata. This time, however, was different.

Were we willing to test the claims of a karate master who said he could do amazing things with his psychic abilities? Of course we were, even if that meant being exposed to the possibility of great bodily harm. Luckily, the strike would not be performed with brute muscle force but through *qi*, the elusive "natural energy of the universe."

No-Touch Punches

First we were given some videos of a man named George Dillman performing demonstrations of "no-touch" knockouts. Dillman is a ninth-degree black belt and one of America's best known karate personalities, according to his Web site. He claims he has discovered mysterious "pressure points" and the even more mysterious technique that allows him and his students to flow *qi* toward a target and knock it to the ground.

In the videos you can actually see a master waving his hands in the air and a volunteer standing in front of him first oscillating and then collapsing to the floor—exactly as Obi Wan Kenobi would do on an Imperial guard in the *Star Wars* films.

It was very interesting, but we were not impressed. It looked like the old hypnotic stunts where the hypnotist stands in front of someone, points a finger to his face telling him that he is going to fall backward and, after a while, the person falls as expected.

It's a game of expectations, if you will. I tell you what you are supposed to do, and if you feel you are put on the spot or are willing to comply with my request (out of sympathy, admiration, fear, or simple compliance), you will do it.

Taking the Challenge

Of course, watching a videotape and actually standing in front of a karate master who could kill you with his pinkie are two very different experiences. I talked with Luigi and we both agreed that the human element had to be taken care of. Even if you put a skeptical person in front of the

master, there is no guarantee that he or she will resist the suggestions of the *qi*-weaver. Anxiety or fear could still be instilled in the volunteer by the presence of many other karate specialists, the presence of the cameras, or by the expectations of everybody there.

So, we thought it would be best if one of us could be the volunteer instead of a stranger.

Luigi is always ready to try new things. Through the years he has eaten glass, washed his face with fire, put an eight-inch nail up his nostril, pierced his skin, slept on a bed of nails, and had a thirty-kilo (about sixty-six-pound) stone broken on his chest by a sledgehammer. Although he would be on the spot, I would sit close by and watch the scene (someone has to do the dirty work!)

George Dillman explains the proper toe positioning to avoid being knocked out by *qi*.

Mesmer Reloaded

The experiment was going to take place in a gym located in Milano, Italy, where an associate of Dillman's, Leon Jay, was visiting especially for this filming. Jay is a very likeable fellow and was ready to help and willing to be tested.

First he demonstrated his ability on a series of volunteers from various gyms, karate students who were ready to be knocked out by Jay's imaginary punches. And they were. One by one, all of the students fell on the floor with dramatic movements.

It was then the turn of the skeptics.

Luigi took center stage as we all watched. Jay started to wave his hands around Luigi, who just stood there with his eyes closed at first, as suggested, and then open. Nothing happened. Jay attempted again for a few minutes, but nothing really happened.

Luigi explained that with closed eyes it was easier to lose balance, which is why he had opened them. Other than that, it appeared he was immune to the *qi* punches.

We then tried a different test. We decided that it would be interesting to subject Jay to the same kind of experiments that were presented to the proponents of human magnetism in 1784 in Paris by a Royal Commission created to investigate Mesmerism. The test was simply to have Jay again demonstrate his powers on one of the best students, one of those who had reacted beautifully to his hand weavings. This time, however, the student would stand behind a dark bed sheet with Jay on the other side trying to project *qi* at given intervals dictated by us. Of course, the student did not know when Jay was sending his punches or when he was just standing there motionless. In other words, he did not know what to do or when to react. He just remained standing there with a puzzled look on his face, waiting for the *qi* blow.

So you see? It's only a question of toes and tongues. You can be the most powerful Jedi knight in the universe, but if I keep my toe down, you are nothing more than a useless C3PO.

A "Precious Secret"

Jay took the results of the tests quite well, even if he could not explain what went wrong in the demonstrations. It had always worked before, even if he had never subjected himself to this kind of testing. It was very interesting, when the filming was over, to hear the comments by George Dillman himself. Interviewed by National Geographic, he was ready to explain the failure of his pupil.

"The skeptic was a total non-believer" he said. "Plus . . . I don't know if I should say that on film. But if the guy had his tongue in the wrong position in his mouth, that can also nullify it. Yeah. In fact you can nullify a lot of things, and you can nullify it if you raise your two big toes. If I say I am going to knock you out and you raise one toe, and push one toe down, I can't knock you out. And then if I go to try again, you reverse it. If you keep doing this I won't knock you out."

So you see? It's only a question of toes and tongues. You can be the most powerful Jedi knight in the universe, but if I keep my toe down, you are nothing more than a useless C3PO. Handy to know.

Note

A video of the test can be seen (when it is not removed by someone who prefers it not to be seen) on YouTube. Recently, it could be reached at this address: www.youtube.com/watch?v=p7DHzZvCIWo. □

Electric Asteroid Zaps Earth

The public rightfully paid little attention to the recent near-Earth flyby of asteroid 2007 TU24, a piece of rock approximately 150 meters in diameter that flew past Earth on January 29 at about 1.4 times the lunar distance. There was no danger of any collision, just a rare chance to observe a fast-moving asteroid through a modest-sized telescope. But for members of ThohT, an online bulletin board (www.tu24.org), it was a matter of grave concern. As a group on the fringes of the "electric universe" movement, they were claiming that because asteroids allegedly have a powerful electric charge, the close approach of asteroid 2007 TU24 was going to zap Earth with all kinds of nasty effects. (How an asteroid or other celestial object might acquire a net electric charge is never given a convincing explanation other than the vague claim that it will somehow pick up "negative ions.")

According to a video posted to YouTube (see http://tinyurl.com/2ezccp) that drew over 200,000 hits, TU24 "could be a negatively-charged asteroid" and thus might cause "plasma discharge interference" with Earth, resulting in "earthquakes, deadly storms, and massive eruptions" across our planet. Despite several elementary-level science errors in the video (such as confusing "diameter" with "mass"), many people became alarmed, while others at tu24.org gleefully set out to record the electromagnetic effects of the asteroid's passage, whether there were any or not.

Robert Sheaffer's World Wide Web page for UFOs and other skeptical subjects is at www.debunker.com.

An artist's conception of an asteroid "zapping" earth.

"Severe weather is being reported worldwide since TU24's entry into the magnetosphere. From extreme conditions in China to Canada and the States to extreme cold in the Middle East and snow in Jerusalem. ALL SINCE THE 'DATES OF CONCERN' TIMETABLE ON THE RIGHT. Coincidence?" Well, snow and cold are not exactly unexpected during winter.

But Michael Goodspeed, writing on the Thunderbolts Web site (www.thunderbolts.info), decries the "slick" presentation of tu24.org, taking pains to note that this group has nothing whatever to do with the responsible proponents of the Electric Universe theory. As Steve Smith, another Thunderbolter, explained about TU24, "the object is far too small, plasma in space is far too diffuse, and its encounter with Earth was at too great a distance for any such phenomena to appear." In other words, TU24 will have no observable effect on us—not because it isn't electric, but because its spark is too small.

According to the Thunderbolts group, astronomers should do away with not only the newest theoretical concepts such as dark matter and dark energy, but with neutron stars, black holes, and indeed the Big Bang itself. In *Thunderbolts of the Gods*, David Talbott and Wallace Thornhill write, "We contend that humans once saw planets suspended as huge spheres in the heavens. Immersed in charged particles of a dense plasma, celestial bodies 'spoke' electrically and plasma discharge produced heaven-spanning formations above the terrestrial witnesses. . . . Around the world, our ancestors remembered these

discharge configurations in apocalyptic terms. They called them the 'Thunderbolts of the Gods.'" If this sounds vaguely familiar, it might be because the "electric universe" is much like Velikovsky without using the V-word. (Recall that old-fashioned creationism has been repackaged and given new life as modern-sounding intelligent design.)

As is usually the case with such grandiose theorizing about ancient history, the really interesting stuff occurred well before any convincing, permanent records of it could be made, and the phenomenon seems determined to never occur again in this age where most everything gets recorded. By way of proof, the authors offer up numerous Native American and other ancient rock carvings of a squatting man that proponents claim greatly resembles a "plasma instability." Apparently these ancient people witnessed "an episode of high-energy plasma incursion into Earth's atmosphere" and made drawings of it, which unenlightened anthropologists mistook as squatting human figures. Other familiar drawings from antiquity, including the famous Athenian Owl, are plasma discharges as well.

Perhaps these authors' most astonishing "discovery" of the "electric universe" is that

> . . . stars are not thermonuclear engines! This is obvious when the Sun is looked at from an electrical discharge perspective. The galactic currents that create the stars persist to power them. Stars behave as electrodes in a galactic glow discharge. Bright stars like our Sun are great concentrated balls of lightning! The matter inside stars becomes positively charged as electrons drift toward the surface. The resulting internal electrostatic forces prevent stars from collapsing gravitationally and occasionally cause them to "give birth" by electrical fissioning to form companion stars and gas giant planets.

What isn't explained is why the "positively-charged" sun doesn't suck all of the "negatively-charged" comets directly into it faster than a speeding bullet.

These same authors in *The Electric Universe* dismiss cosmic microwave background radiation, cited by astronomers as clinching the proof of the Big Bang, as "simply the 'hum' of the galactic power lines in the vicinity of our solar system." Astronomers are likewise deluded by current theories into assuming that the cratering we see on all solid bodies in our solar system is caused by impacts of solid bodies (our Earth being somewhat unique because its surface is "recycled," but a few craters can still be found). Properly understood, these craters are caused by "electrical arc scarring." Talbott and Thornhill explain that "minutes or hours of electrical scarring can produce a surface like that of the Moon, which is later interpreted in ad hoc fashion to be billions of years old."

The "Electric Universe" is codswollop, with or without gods hurling thunderbolts.

Talbott and Thornhill write, "For centuries astronomers assumed that gravity is the only force that can give birth to stars and planets or can direct the motions of celestial bodies. They assumed that all bodies in the universe are electrically neutral, comprised of equal numbers of negative and positive particles. With this assumption astronomers were able to ignore the extremely powerful electric force. It was a fatal mistake" (*Thunderbolts of the Gods*, Chapter 1).

Actually, it's no mistake to assume that two bodies are electrically neutral when gravitation alone, the weakest fundamental force, fully explains their motions, as well as those of every other known astronomical object. Even a small deviation from electrical neutrality would result in massive forces of Coulomb repulsion or attraction far overpowering the gravitational force, and this simply is not occurring. At any given time, there are always a few comets in the inner solar system. If these bodies had a negative charge as is claimed, Coulomb's Law dictates that they would repel each other across great distances, far overpowering the effects of the sun's gravity.

Physicists tell us that the electrical force is $2.27 3 10^{39}$ times stronger than the force of gravity. This is an enormous difference, the electrical elephant vastly overpowering the gravitational flea. Yet the motions of every object in our solar system are explained by gravitation alone, dutifully obeying Newton while ignoring Faraday and Coulomb. How is it possible that the much weaker force operates to the exclusion of the overpoweringly stronger one? The answer is simple: celestial bodies are electrically neutral with respect to each other to a uniformity far greater than one part in 10^{39}. And the "Electric Universe" is codswollop, with or without gods hurling thunderbolts.

* * *

Finally, let me tell you about a promising medium of climate research that has just been published: *pig spleens*. According to an Associated Press story dated December 26, 2007, North Dakota farmer Paul Smokov, eighty-four, is perhaps the only remaining practitioner of this form of divination that his parents brought over from the Ukraine more than a century ago.

According to this latter-day version of *haruspicy* (the art of forecasting from animal entrails, excelled at by certain ancient priests), if a pig's spleen is wide where it attaches to the pig's stomach and then narrows, it foretells an early winter followed by a mild spring (much like when a groundhog fails to see his shadow). However, a narrow-to-wider spleen foretells harsh spring weather.

This year's spleens are of uniform width, which foretells "a normal year with no major storms." The pigs were unaware that North Dakota had already broken snowfall records with a storm on December 4, eclipsing records set back in 1926. And little did the pigs know that the Bismarck Tribune would report on February 20 that "Fargo broke a record that had stood for 119 years,

WARNING: Animal Extremists are Dangerous to Your Health

Animal extremists are foot soldiers in a quiet war—one that could restrict the ability of researchers to develop drugs urgently needed for the treatment of new and emerging diseases.

P. MICHAEL CONN and JAMES V. PARKER

Visual Genotype for CD4
Common: G G G G G C T C A C G C A C
Rare: A A A A A T C T G T A G G T
= Homozygote - Common Allele
= Homozygote - Rare Allele
= Heterozygote

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For years we have laughed at the antics of people in some of the more extreme segments of the animal rights movement—groups like People for the Ethical Treatment of Animals (PETA). They put up billboards encouraging children to drink beer instead of milk and vilify fast food chains for cooking veggie burgers on the same grill as meat. They even wrote to Oklahoma City bomber Timothy McVeigh urging him to stop the killing at his dinner plate and to request a vegetarian dinner for his last meal. All this sure gets the media's attention and sometimes even a chuckle from the public. Well, maybe its time to stop laughing.

Washington, D.C., police officers arrest rabbit-costumed PETA demonstrators Debbie Mitchell (L) and Melynda DuVal (R) during a protest in front of the Department of Transportation. AFP PHOTO/ Mario TAMA [Photo via Newscom]

We may choose to ignore the poor taste of the animal rights movement in equating the Holocaust of World War II with the raising of broiler chickens or the "enslavement" of circus animals with the slavery of African-Americans in the United States. But consider this curious candor from one animal rights leader, "The life of an ant and that of my child should be granted equal consideration" (Fox 1992). What does *that* mean?

Can we ignore this statement from PETA co-founder Alex Pacheco: "Arson, property destruction, burglary, and threat are 'acceptable crimes' when used for the animal cause" (Activist Cash.com 2008a)?

FBI special agent David Szady, referring to Earth Liberation Front, one extremist group of the animal rights movement, said, "Make no mistake about it, by any sense or definition [this] is a domestic terrorism group" (Hemphill 2003). Animal rightists are domestic terrorists?

In the short term and for most of us, there is no reason for the jitters. We are not the scientists who use animal models to unlock secrets of physiology that may improve our health. So far, they have been the primary targets of animal extremists' wrath—people like the two Oregon researchers whose homes and cars were vandalized last December (Figures 1 and 2). There is no indication that the extremists will, any time soon, go after you and me for eating a hamburger, keeping a pet, taking meds, or using a pacemaker.

Figure 1 (left). Garage door vandalized at the home of an Oregon scientist and colleague of the authors.

Figure 2 (right). Spray-painted automobile at the home of an Oregon scientist and colleague of the authors. The white material is paint stripper.

The inconvenient truth is that in the long term, and for all of us, there is cause for concern. The agenda of extreme animal rightists is crystal clear: end the use of all animals as food, clothing, pets, and subjects of medical research. Yet we live longer and healthier lives due to vaccinations, better drugs, and improved information about nutrition and disease prevention—longer lives are the result of animal research.

Noting the impact of these extremists on the nation's health agenda, famed heart surgeon and 2007 congressional gold medal winner Michael DeBakey said, "It is the American public who will decide whether we must tell hundreds of thousands of victims of heart attacks, cancer, AIDS, and other dread diseases that the rights of animals supersede a patient's right to relief from suffering and premature death."

Clarifying definitions will provide a good basis for discussion.

The term *animal welfare* refers to the idea that humans have a responsibility to care for animals and look out for their well-being. Because seeking animal welfare is in line with what is noblest in human nature, it is sometimes called "acting humanely." Most reasonable people agree with this. Researchers reflect these values in subscribing to high-quality care for animals, something codified into law as the Animal

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BENEFITS OF ANIMAL RESEARCH

Dr. Sally DeNardo, of the University of California Davis, grabs onto the tail of a mouse with a tumor as it explores its surroundings above a coil that is part of the AMF (alternating magnetic field) generator machine used for scientific study of cancer in mice. (Renee C. Byer/Sacramento Bee/MCT) [Photo via Newscom]

Animal research saves human lives *and* animals—both benefit from life-saving vaccines and antibiotics for a variety of diseases. And those are just two medical treatments among hundreds developed from animal research. From improved surgical techniques to advances in organ transplant, animal research has vastly improved and prolonged life. Seven of the last ten Nobel Prizes awarded in medicine relied on animal research.

As early as the twentieth century, animal research allowed scientists to understand the malaria life cycle, the pathogenesis of tuberculosis, and the development of an antiserum for diphtheria. Today, gene therapy for cancer and an improved tuberculosis vaccine ("the first vaccine in 100 years that is more potent than the current one") are the result of ongoing research using animals. Multiple advances in pain therapy would not have been possible without it.

The reduction of several prenatal and newborn complications, as well as hypertension reduction during pregnancy, is the result of animal research using sheep.

A pediatric heart valve "that can be loaded into a catheter, inserted into a vein in the groin area, guided into place and deployed at a precise location within the heart" is being developed by UCLA researchers as an alternative to risky, invasive open-heart surgery. Pigs are being used to test the device because their circulatory system closely resembles that of humans.

And thanks to advances in *in vitro* fertilization and embryo transplant techniques, many endangered species have a fighting chance.

Sources for other medical breakthroughs using animal research: UCLA Newsroom, http://newsroom.ucla.edu/portal/ucla/animal-generates-new-treatments-45057.aspx; American Association for Laboratory Animal Science, www.aalas.org/pdfUtility.aspx?pdf=sect-2_animals_in_research.pdf; and the Foundation for Biomedical Research, www.fbresearch.org/Education/nobels.htm.

Welfare Act. Federal regulations are in place to minimize pain and suffering in research. At the authors' place of employment, the Oregon National Primate Research Center, animals live longer lives than their counterparts in the wild, owing to high-quality food and excellent veterinary care. One sad truth is that our animals get better medical care and nutrition than do many children in the U.S.

Animal rights, sometimes used as shorthand for any concern for animals, really means the belief that animals, like humans, possess some inalienable rights. It is our view that while animals do not have such rights—rights and responsibilities are correlative, and animals are unable to take responsibility for their actions—it is our duty as humans and ethical researchers to care for them humanely, just as we care for our pets.

Animal extremists portray themselves as engaged in a "David against Goliath" struggle on behalf of animals, but are they the true animal welfarists? Hardly! In 2006 alone, PETA killed 2,981 dogs, cats, puppies, kittens, and other animals—an astonishing 97 percent of the animals left in their care, according to the group's own records supplied to the Virginia Department of Agriculture and Consumer Services (2006). For comparison, the Virginia Society for the Protection of Animals (which operates in Norfolk, Virginia, as does PETA) euthanized less than 2.5 percent of the 1,404 animals placed with them in 2006. While PETA collects tens of millions in donations by claiming to advocate for the welfare of animals, the group has actually killed 17,400 pets since 1998 (Center for Consumer Freedom 2008).

PETA's most recently available tax filing (according to Guidestar.org) lists nearly $30 million in income from contributions, gifts, and grants offered by individuals who may believe that it is actually an animal welfare organization that helps strays.

Many of its donors are also unaware that PETA has provided cash to individuals who publicly engaged in a terrorist agenda. A few examples were provided by *Lewiston Morning Tribune* (Idaho) writer Michael Costello. "PETA donated $45,200 to . . . ALF [Animal Liberation Front] terrorist Rodney Coronado's legal defense. (Coronado was convicted in connection with an arson attack at Michigan State University that caused $125,000 worth of damage and destroyed thirty-two years of research data. On December 14, 2007, in a Federal Court in San Diego, he entered a guilty plea to one count of distribution of information related to the assembly of explosives and other charges.) They also . . . 'loaned' Coronado's father $25,000 dollars [*sic*], which to our knowledge, has not been repaid. In 1999, PETA gave $2,000 to David Wilson, a national 'ALF spokesperson.' . . . And sure enough, PETA has contributed to the ALF's sister organization; according to its own IRS filing, in 2000 PETA openly donated $1,500 to the Earth Liberation Front. The Federal Bureau of Investigation (FBI) calls ELF 'the largest and most active U.S.-based terrorist group'" (Costello 2003).

PETA probably doesn't want its donors to know that. Instead, it directs outrage toward "vivisectors" falsely accused of cruelty to animals to incense donors into reaching more deeply into their pockets.

"We are complete press sluts," the PETA leadership has claimed (ActivistCash.com 2008b). On that single issue, we agree with PETA.

Although PETA is careful not to openly embrace the assaults, vandalism, and threats perpetrated by some groups, it does not oppose such violence either. Speaking of one animal extremist group whose leaders have been convicted of animal terrorism, PETA president Ingrid Newkirk said, "More power to SHAC [Stop Huntingdon Animal Cruelty] if they can get someone's attention" (ActivistCash.com 2008b).

The Animal Liberation Front can speak for itself, however. Says one of its leaders, Tim Daley, "In a war you have to take up arms and people will get killed, and I can support that kind of action by gasoline bombing and bombs under cars, and probably at a later stage, the shooting of vivisectors on their doorsteps. It's a war, and there's no other way you can stop vivisectors" (Lovitz 2007). Jerry Vlasak, head of the ALF Press Office, is equally candid, "I don't think you'd have to kill—assassinate—too many [doctors involved with animal testing]. I think for 5 lives, 10 lives, 15 human lives, we could save a million, 2 million, 10 million non-human lives" (McDonald 2007).

To "sell" their story, animal extremists rely on the lack of public awareness of tight federal regulation on animal research—random inspections of facilities by the United States Department of Agriculture for compliance to the rigorous standards of the Animal Welfare Act.

Animal extremists wrongfully claim that data obtained from animal research cannot be extrapolated to drug development for humans. A recent survey of 150 drug compounds from twelve international pharmaceutical companies found that animal testing *had* significant predictive power to detect most—not all, admittedly—of 221 human toxic events caused by those drugs (Olson et al. 2000).

Animals are important not just in testing for efficacy and safety of drugs but also to the basic research that leads to medical advances. Ironically, animal extremists were decrying the uselessness of our Center's basic investigations in primate stem cell biology on the very day in November 2007 that one of our scientists announced the first cloning of stem cells from non-embryonic primate tissue, subsequently hailed by *Time* magazine as the top discovery of 2007.

Animal extremists often show willful naïveté in considering human health needs. Smallpox, malaria, and polio have been nearly eradicated from much of the world—you no longer see wards of people confined to "iron lungs." Animal research is inextricably tied to improved human health. The first recognition of diabetes as a disease and the explanation of its cause, as well as its first treatment and early management, came directly from animal research conducted in universities. Improvements in treatments for this disease continue to come from these same sources. While these accomplishments are tributes to animal research, extremists fail to recognize that antibiotic-resistant tuberculosis, AIDS, diabetes, and heart disease still need the attention of researchers, who in turn need ethical animal research to advance their studies.

What are we to do when those very researchers are targeted for harassment and violence?

In 2006, members of ALF declared that they left a Molotov Cocktail outside the Bel Air home of Dr. Lynn Fairbanks, the Director of the Center for Primate Neuroethology at UCLA's Neuropsychiatric Institute. Actually, the explosive device was placed on the porch of the faculty member's seventy-year-old neighbor. Fortunately, the timing device failed (Editors 2006).

About one year later, a group calling themselves the Animal Liberation Brigade claimed responsibility for placing a lighted incendiary device next to a car parked at the home of Dr. Arthur Rosenbaum, who is chief of Pediatric Ophthalmology at UCLA's Jules Stein Eye Institute. Authorities described the event as "domestic terrorism." The delivery address was correct this time, but fortunately for Dr. Rosenbaum and his neighbors, the device did not ignite due to ineptness on the part of the "activists" (McDonald 2007). Police noted that the device had the

New Recommendations for Protecting Researchers Issued

The Society for Neuroscience released a document on February 7, 2008, to help protect academic researchers who "face intimidation, harassment, and physical attack by fringe anti-animal research extremists." The "Best Practices for Protecting Researchers and Research" report calls on research institutions "to ensure the ability of researchers to conduct their research in a safe environment."

It also calls on universities and research institutions to:

- Support the efforts of governments worldwide to combat these anti-research campaigns. In the U.S., a linchpin of these efforts is the Animal Enterprise Terrorism act, a new law that strengthens and codifies penalties for illegal animal rights activities.
- Bear the primary burden of maintaining the fundamental principles of academic freedom.
- Provide "an appropriate and safe environment free from attacks" for their researchers and to extend that safety to personal residences.
- Encourage research institutions worldwide to implement a series of recommendations to "preempt and react to anti-research activities."

The recommendations suggest a series of processes in the areas of leadership and administration (responsibility for protecting against attack "lies at the highest level of the executive and academic administration"); security (institutions must "develop and plan with local law enforcement"); and public affairs and communication.

"When protests extend beyond constitutionally protected activities and become personally violent or intimidating, the leadership and administration are obligated to demonstrate that protection of researchers is a core responsibility and directly affects the livelihood of both the institution and the global research enterprise."

potential to create great harm.

Another talented researcher, Dr. Dario Ringach, ultimately gave in to animal extremists, promising to stop his research on monkeys in exchange for cessation of harassment of his family, including his young children. "You win," he e-mailed them (Epstein 2006).

It is worth mentioning that Ringach's, Rosenbaum's, and Fairbank's research all were humanely conducted and met federal standards.

As you can see, we are not talking about peaceful protests here. As the editors of *Nature Neuroscience* (Editors 2006) put it, "Over several years, the researchers have been subjected to a campaign of harassment that included demonstrations at their homes and pamphlets distributed to their neighbors, as well as threatening phone calls and emails. Elsewhere, targets of similar protests have had abuse shouted through bullhorns or painted on their homes or cars, doorbells rung repeatedly, and windows smashed or doors broken down while family members were in the house. Animal-rights Web sites post the names of scientists' spouses and children, along with their ages and schools."

According to the Foundation for Biomedical Research (2006), a handful of illegal acts by animal extremist groups in 1994 had risen to a hundred such attacks ten years later. Society for Neuroscience members reported more attacks in the first six months of 2007 than in the five-year period from 1999 to 2003, prompting that organization to release, just this past February, the document "Best Practices for Protecting Researchers and Research: Recommendations for Universities and Institutions" (2008, see sidebar, page 27).

Even though these and similar events send a chilling message to researchers and young people considering the field of biomedical research, they are poorly reported in the general media. The public doesn't hear about the impact this has

Medical Benefits of Animal Research
for Animals and Humans

HUMANS

VACCINE DEVELOPMENT	RESEARCH		TREATMENT
• Diphtheria	• AIDS	• Allergies	• Allergies
• Hepatitis	• Alzheimer's	• Birth Defects	• Anesthesia
• Lyme Disease	• Blindness	• Burns	• Antibiotics
• Measles	• Cancer	• Diarrhea in Infants	• Artificial Joint Replacement
• Polio	• Diabetes	• Emphysema	• Birth Defects
• Rabies	• Epilepsy	• Glaucoma	• Cancer
• Rubella	• Heart Disease	• Huntingdon's Disease	• Childhood Poisonings
• Tetanus	• Multiple Sclerosis	• Muscular Dystrophy	• Diabetes
• Whooping Cough	• New Drug Development	• Nutrition	• Emphysema
	• Open Heart Surgery	• Parkinson's Disease	• High Blood Pressure
	• Spinal Cord Injury	• Tooth and Gum Disease	• Kidney Disease
			• Malaria
			• Organ Transplants
			• Stroke

ANIMALS

• Anthrax	• Allergies	• Antibiotics
• Blue Tongue in Sheep	• Artificial Insemination	• Artificial Joints for Dogs
• Brucellosis in Cattle	• Improved Pain Killers	• Blood Transfusions
• Distemper in Dogs and Cats	• Embryo Transfer Techniques	• Cataracts
• Equine Encephalitis	• Inherited Diseases	• Glaucoma
• Equine Rhino Virus	• Pet Food Nutrition	• Kidney Transplants
• Equine Influenza	• Tooth and Gum Disease	• Lameness in Horses
• Feline Leukemia		• Pet Cancer
• Hog Cholera		• Orthopedic Surgery
• Infectious Hepatitis in Dogs		• Vitamin Deficiency Diseases
• Lyme Disease		• Parasites
• Newcastle Disease in Poultry		-Giardiasis -Heartworm
• Parvo Virus in Dogs		-Hookworm -External Parasites
• Pneumonia Complex in Cats		-Leptospirosis
• Potomac Horse Fever		
• Rabies		
• Tetanus		

Boxed information from the Pennsylvania Society for Biomedical Research (www.psbr.org/society/ABOUT.htm).

on students viewing research as a potential career—or those already active in the field. Nor does it hear how the loss of talented researchers threatens creation of the new knowledge needed to devise cures.

Former University of Iowa President (now of Cornell University) David Skorton worries that researchers and students are being scared off by attacks from animal rights extremists. ALF, which took credit for break-ins and destruction at the University of Iowa, distributed the home addresses of researchers who conduct animal research to animal activists. "Publicizing this personal information was blatant intimidation," Skorton pointed out, adding that because of safety worries, "numerous researchers are even concerned about allowing their children to play in their own yards." He acknowledged that the cost of such intimidation is difficult to nail down, but he believed it "could be measured by many, many lives" that might not be saved by medical advances (Lederman 2005).

His words echoed those of Richard Bianco, vice president for research at the University of Minnesota, where an attack by vandals in 1999 caused more than $2 million in damage. "The financial aspect is the least of our problems. . . . The hardest thing is people see this and don't want to go into science," he said. "Why would they go into science when they can have their work threatened like that?" (Agri News 2005).

Senator Orrin Hatch understood. "When research laboratories and university researchers are targeted and attacked, the ones who lose most are those who are living with a disease or who are watching a loved one struggling with a devastating illness" (Davidson 2004).

Because it seeks to stop ethical medical research, animal extremism is bad for our health. There are several steps the public can take to help reduce this threat to public health and good science.

We should be very careful in our giving to ensure that our contributions don't wind up aiding those who use the weapons of intimidation and violence. At the same time, we want to support organizations with proven records of caring for animals or of providing humane education that enhances the care received by laboratory animals.

If we have scientists who are neighbors, we can offer to organize a neighborhood watch and volunteer to speak to the media about how we have benefited from animal research if their homes are vandalized.

While mentioning the importance of speaking out, we can contact the local organization or university supporting research (a list, by state, is available at www.statesforbiomed.org/) and offer to testify about what animal research has meant to someone in our family. When our kids come home from school with animal rights literature that denigrates animal research, we can contact their teachers to ask that they invite a researcher or veterinarian from a local university or research center to visit the class or even take the students on a tour of their facility.

It is because we thought it was time to sound the alarm that we wrote *The Animal Research War*[1] describing what we think the public needs to know about this quiet war—"quiet," because it is seldom reported in the news. We want to tell people about the battle zone that we, as animal researchers, live in every day. We also want to communicate the benefits of animal research, past and potential, as well as the compassion with which researchers care for laboratory animals. If this war is lost, it is all who struggle with disease—that means all of us, sooner or later—who will bear the burden.

Note

1. The authors have written *The Animal Research War* (Macmillan/Palgrave, 2008), a personal account of what it is like to be terrorized, an analysis of the effect of animal extremists on the world's scientists, and the way in which the public and legal system is changing its views on animals. The book traces the evolution of the animal rights movement, profiles its leadership, and reveals the remarkable value of the research enterprise.

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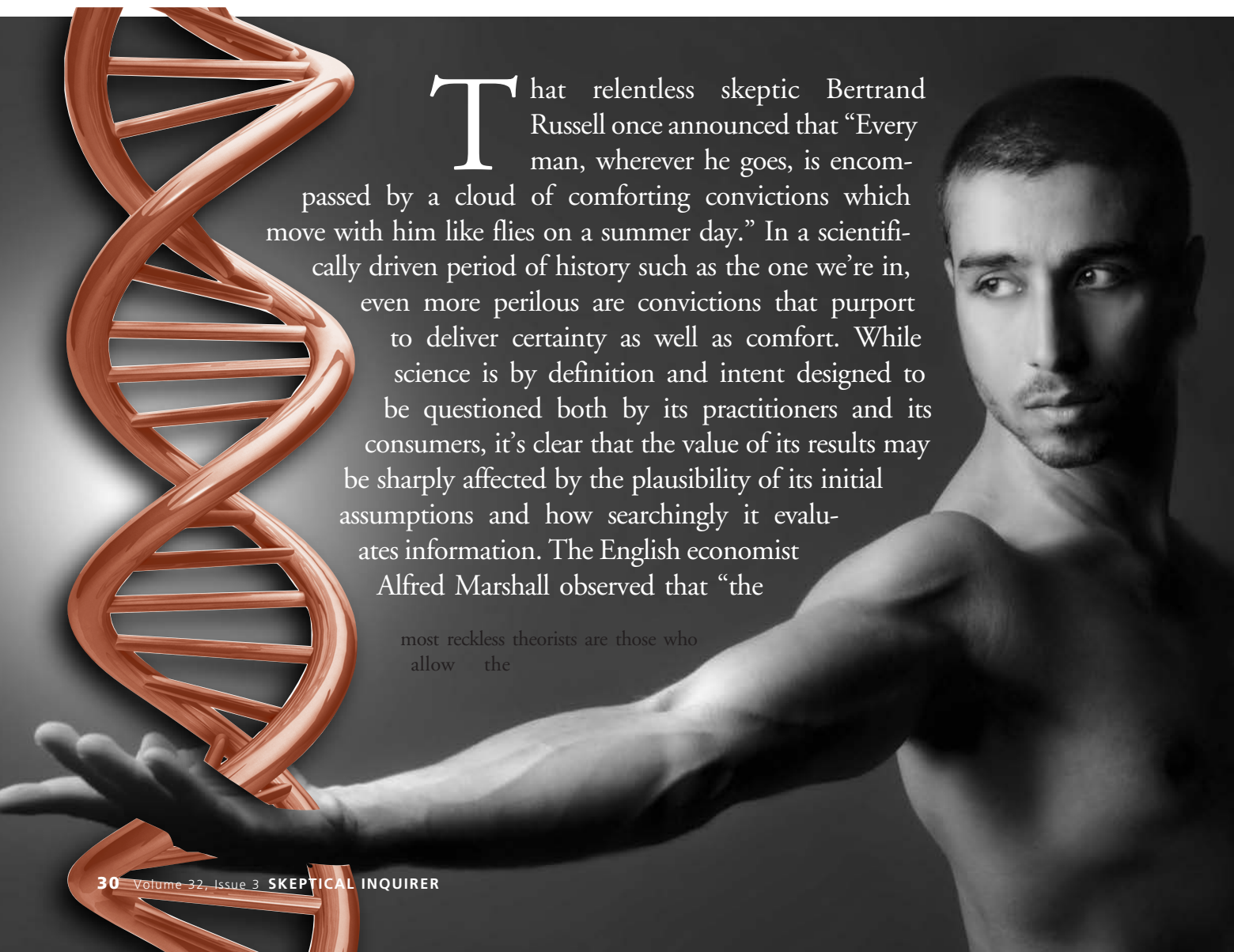
The Human Nature Project

Why is social science segregated from biology as though humans aren't part of nature? We need a movement exploring our inner nature with all its mystery. Our genes are a crucial part of that story.

LIONEL TIGER



That relentless skeptic Bertrand Russell once announced that "Every man, wherever he goes, is encompassed by a cloud of comforting convictions which move with him like flies on a summer day." In a scientifically driven period of history such as the one we're in, even more perilous are convictions that purport to deliver certainty as well as comfort. While science is by definition and intent designed to be questioned both by its practitioners and its consumers, it's clear that the value of its results may be sharply affected by the plausibility of its initial assumptions and how searchingly it evaluates information. The English economist Alfred Marshall observed that "the

most reckless theorists are those who allow the

facts to speak for themselves."

Of course, this is dangerous. Getting things right matters. I want to deal with old assumptions and new facts, and what should be done about them. My principal focus is the set of working principles and facts speaking for themselves that compose the idea of "human nature." And to do this, I have to begin with a strange feature of modern as well as old universities: natural and social sciences are separate operations. Not only do they usually occupy different real estate, but their intellectual operations are often quarantined from each other both conceptually and in day-to-day practice.

However, think about how strange this is. Does the fact that natural science is one thing and social science another mean that social behavior is somehow not natural? For nearly all educational and research institutions, the answer to that question is yes. Perhaps vaguely, perhaps inadvertently, perhaps casually, or perhaps assertively—but still yes. The consequences are enormous not only for science itself but for social policy, legal theory, ethical analysis, and our understanding of the sources of pleasure and pain.

All this is the subject of my aria today.

It's not a new song. Aristotle proclaimed that "Man is by nature a political animal," and he meant it. But the political scientists and other social scientists who followed him largely focused on the word "political." They virtually ignored the most important and arresting phrase, "by nature."

While one shouldn't take the liberty of imposing on someone else's pleasure centers, nevertheless I can imagine that Aristotle would have been delighted with the human genome project and would have endorsed the front-page placement of the *New York Times* story of December 5, 2002, which described the full explication of the mouse genome. This is interesting in itself but became even more so because it appears that of the 30,000 genes possessed by the mouse, only about 300—1 percent—have no obvious counterpart in the human genome. Given that we and our apparent rodent cousins have been evolving separately for seventy-five million years, this is remarkable. It suggests in both real and metaphoric terms that our biological reach into history and prehistory can be seen as comparable to the manner in which rocks, papayas, wood, and asparagus all share the elemental units that physics has identified. Mouse nature? Human nature? So far and yet so near. And yet, I dare say that it remains overwhelmingly the case in the social sciences that almost everywhere it is possible to receive a doctoral degree without studying any other species than humans. Even then, the work is likely to involve people and their behavior in the past generation and in a highly limited geographical area. This is wholly understandable, yet intellectually, it is akin to studying the whole of geology but focusing exclusively on Minnesota or doing botany while ignoring photosynthesis.

Allergies to Reductionism, Suspicion of Genes

There are two overly concise reasons for the segregation of social science from biology. The first has to do with a broad allergy to "reductionism"—in effect, trying to explain a social phenomenon by a physical or genetic cause. Perhaps the principal statement of this was—not surprisingly—from Frenchman Emile Durkheim. Around the turn of the last century, he issued his influential book *The Rules of the Sociological Method*, which established reductionism as a major error and recommended that the social sciences distance themselves from the biological, even though (or perhaps because) his principal teacher Alfred Espinas was himself a biologist. This anti-reductionism ethic became widely diffused. Not only did it serve the normal purposes of relatively imperialistic academic disciplines seeking greater resources and autonomy, but it also wholly supported the long-standing divide between societies involved in either human or other animal research.

The second and perhaps more significant reason for the segregation of the two sciences has to do with the appropriation of some biological and many nonbiological materials by various fascist groups, especially the Nazis. Consequently, there was plausible and understandable suspicion of attributing to genes any major social or cultural phenomena. Of course the intellectual baby was thrown out with the acrid bathwater, and the study of links between genes and human nature became exceptionally torrid and academically dangerous to boot. It remains a highly sensitive matter and a bulwark of the politically correct priesthood's catechism. In the United States, the intellectual mess was abetted when the original legislation dealing with affirmative action in its various modes was extended from race to include sex—evidently as a farcical suggestion—since several Southern congressmen were convinced the entire bill was foolish and unpassable. But race and sex are apples and oranges. The differences between the races first of all vary in a gradient of largely minor characterics. Secondly, they reflect relatively minor differences in the actual conduct of lives. However, there is an immense catalogue of defined gender differences from the level of the cell to an indication that among Vervet monkeys, males and females make the same gender-based choices of toys as human children do—without benefit of GI Joe, Barbie, and the dread power source: role models.

On the other side of the political spectrum—the communist left—human nature as an idea was anathema too, because the prevailing rule was that ideology conquered all. A new Soviet or Chinese man or woman would follow the correct guidance of the enlightened party in the name of the almighty founding principles. A kind of Skinnerian environmentalism united communist and social science theory even if this was hardly comprehended by our colleagues who were annoying pigeons and nocturnal mice in expensive labs off Harvard Square. The experimenters woke up the mice and then made them do what they do anyway at night amid pipes—run mazes. On the basis of such operations, huge learning theories were erected. At one point, B.F. Skinner himself asked the question—which he then ignored—"what's in the rat?"

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These learning theories animated a huge structure of belief in the decisive role of the environment in shaping behavior and the minimal role of anything approximating "human nature." Of course with the fall of communism, the intellectual certainty of half the world dissolved overnight. The results of seventy years of role models (again, that awful phrase and even worse concept), ideal institutions, and programs for human perfection were swept away in less time than it takes for an unpopular sitcom to be canceled by the Disney Corporation. All that certainty, all that propaganda, all that effort. . . .

I was in Korea in 2002 and before the trip had read a memoir of a North Korean refugee who described standing atop the tallest building in Seoul and marveling that all the people he saw managed to make choices about what to do, where to go, what to buy, with whom to speak *without anyone telling them*, which had been his experience in North Korea. Naturally. People like to do things, they move around, they have projects, affinities, they blunder. So do mice and chimps. Variation is the name of the game of nature. As I tell students studying living systems, the shortest analytic distance between two points is a normal curve. Not only do people vary among themselves—and recall that Darwin's central insight was about the role of variation—but groups also vary. This has led some social scientists to suffer from what my colleague Robin Fox calls "ethnographic dazzle" in which the fact of difference overwhelms the equal fact of consistent central patterns.

Our internal nature is obviously more mysterious, more personal, more intricately connected to foggy fears and orchestral dreams. An Irish poet once announced "To the Blind, everything is sudden."

Time for a More Sophisticated Understanding

Now the overwhelming weight of new work makes it imperative that we go beyond the errors and allergies of the past and try to fashion as sophisticated knowledge of human nature as we have been able to acquire about nature itself.

In 1966 Robin Fox, then of the London School of Economics, and I published a wholly impudent paper in *The Journal of the Royal Anthropological Institute* called "The Zoological Perspective in Social Science." It was all of nine pages, but I think we largely got it right. Then in 1971, Fox and I, both at Rutgers, published *The Imperial Animal* in which we used the exciting linguistic work by Chomsky on the necessity for a genetic basis for language—otherwise language is too hard for little kids to learn; there had to be a hard-wired program for it. Different communities taught different languages but learning a language was the same for everyone.

We broadened the discussion to other, earlier elements of social behavior—after all, language is a relatively recent human innovation. We called the phenomenon the "behavioral biogrammar," a device enabling us to look for human regularities in the production of behavior just as there were clearly regularities in the production of language. Fox and I and countless others have carried on this exploration with various levels of self-consciousness and intellectual aggression, and the result is a new state of play. The most recent full approach to the matter is Steven Pinker's book *The Blank Slate* (see Pinker's article "The Blank Slate: The Modern Denial of Human Nature," SKEPTICAL INQUIRER, March/April 2003). Pinker, as a former student of Chomsky's, could have—had he attended to it—put the biogrammar concept to good, labor-saving use. But there are dozens of others, including Paul Rubin's analysis of biological factors in economics.

What do we get out of this? Let me use physiology as my baseline. We all know that the body needs certain inputs in order to function, and the medical community has accordingly developed what we know as an ideal nutritional profile—this much vitamin A, this much C, that much protein, this much green vegetable and colorful fruit. Elements of this remain controversial, especially since the body has become the sturdiest temple for moral self-assessment. So now virtually everyone is obsessed with the food they eat. Diet books face their enemy cookbooks across bookstore aisles. Many people act as if they think that what they eat will kill them. They employ an extermination model of food. Others see their exquisite choice of tasteless rain-forest mung beans as a sure-fire evasion of the otherwise grim grip of the mortal coil. Nevertheless, there is a fairly agreed-upon general idea of what the body needs and how it should be cared for.

A Portfolio of Behavioral Vitamins (Nine of Them)

The body is the structure. Structure and function are almost invariably related. Behavior is the function. So let's turn to behavior and develop a portfolio of behavioral vitamins that individuals and the body-social need.

Why vitamins? One alternative to that term is *rights,* but I gather that this word causes lawyers and judges to jump up and down with turbulent anxiety. This is always an expensive and unnerving prospect, and you do not want to irritate these people. Another alternative is *needs.* But that is too Dickensian for something as agreeable as what makes social life agreeable. There is also always the danger that the management of these needs will be co-opted by the always-hungry, always well-meaning corps of concernocrats ready and willing to rummage in the lives of others.

So behavioral vitamins it is.

Now for the purposes of this exercise, we suddenly become our own zookeepers. Modern zookeepers are evaluated on the consistency of the conditions they provide their guests compared to the conditions in which they evolved and whether they are

able to reproduce within the confines of the zoo. So allow me to proscribe a list of behavioral vitamins that we should provide each other as we supervise our own zoo, a list based on a broad assessment of the human biogrammar rather than on any pre-existing scheme of morality, piety, and severity. It is based, that is, on what we needed to prosper as a species in our own native environment, which was of course East Africa (it appears our ancestors spread out from East Africa 100,000 years ago; our real roots are there). It's the Old Country, back home, back East.

This is a simpleton's list—banal but a bit cheerful, low-cost, and it doesn't require a postgraduate degree to discuss it.

I do, however, indulge in a minor form of grandiosity, because I describe these vitamin requirements as commandments. But since there are only nine, it's clearly an amateur's list.

1. The first vitamin is the opportunity for protection by rules about maturity. Three-year-olds do not and should not have the same package of rights and responsibilities as thirty-year-olds. It's a good bet that responses to immaturity are rather deeply programmed genomically, and legal systems customarily respond to this program. The outrage over priestly abuse of youngsters is only an especially poignant and dramatic example of this.

2. To indulge in agreeable behavior, we should enjoy the vitamin of access to fresh air and natural light. In various societies such as Sweden and Japan, and South Korea as I recently learned, access to light has a defined economic value. In some places, office buildings may not be built without office windows to the outside for all employees. Devotees of torture and solitary confinement are particularly attached to deprivation of these vitamins, because they know from first-hand experience how effective it is.

3. Greenery is a vitamin. If I asked a class of young students, "how many of you have houseplants," a huge majority would say they did. Humans evolved in nature, and we try to import the upper Paleolithic into our homes and high-rise apartments by buying plants in which the only serious function is aesthetic. Furthermore, people who live in houses with greenery already around them create yet more in the form of gardens, and gardening is currently the most popular American recreation. Part of the human nature project is a new bed of summer herbs, and even, heaven forbid, zucchini. (Whoever eats all that zucchini?)

4. The opportunity for large-muscle movements is a vitamin. Even prisoners are entitled to an hour in the yard. But there is ongoing curtailment in American schools of the opportunities for play involving large-muscle movements, bodily movements over space, and the conduct of lively games, many of which by preference appear to be competitive. This is both a reflection of the fear of lawsuits against school boards, teachers, equipment makers, etc., and anti-male bias by feminizing school systems. Schools have clearly been configured more for female than male nature, and one result is that females are decisively more successful in the system academically as well as emotionally—colleges and universities are on average 57 percent female and 43 percent male.

In a different but related realm, there is also apparently a nine to one ratio of male to female users of Ritalin and similar behavioral management drugs. Perhaps because males throughout the primate world like to move around more than females, human ones in particular are being penalized for their nature. They are required to become drug-users by those responsible for their welfare. Obviously such drugs are useful for some individuals. But it becomes highly suspicious when the sex ratio of prescriptions is so remarkably skewed. Is this about the students or about the system they're in? These issues are more fully explored in my *The Decline of Males* (Tiger 1999).

5. Social contact is a vitamin. Almost everyone several times a day checks the storage device they use for messages or email. Again, managers of solitary confinement understand how debilitating the lack of social contact is. Good zoos provide opportunities for animals to communicate with their fellows —they like it, even if they squabble. So, the ability to communicate with members of our species is a vitamin. It may also take the form of freedom of expression, one variant of it. It also applies to the issue of censorship: who, if anyone, should decide which forms of communication one member of the species should be allowed to indulge? This is finally a primitive issue as well as a politically profound one. When our ancestral hunter-gatherer bands met to decide what to do next, anyone's opinion might have turned out to be valuable. Freedom of speech is efficient.

6. A behavioral vitamin is the opportunity to reproduce. Obviously, some political regimes have sought to curtail this with varying degrees of success and human cost. Inasmuch as this may involve efforts to affect the sexual behavior necessary for reproduction, it is a very broad matter indeed, one very popular among people with opinions. There are also subtler or at least less draconian means of affecting reproductive freedoms—for example those anti-natal ideologies at the core of much modern feminism which, in effect, induced countless women to miscalculate the nature of human reproductive nature. Both Sylvia Hewlett and Midge Decter have recently written about what, in retrospect, will come to seem rather like the unnecessary sacrifices to the Stalinist line by those who embraced it in this country to say nothing of the USSR and elsewhere.

7. Related to this is a vitamin young children need, which is the opportunity for a durable and predictable connection to their parents—at least their mothers. In our study of the Israeli kibbutz movement, *Women in the Kibbutz*, Joseph Shepher and I described how it was the mothers and their mothers in the communities who overwhelmingly voted to disband the children's houses in which their kids were supposed to live from six weeks on. The men always supported the children's houses, which were ideologically better and cheaper. But the children and mothers clearly made their needs and preferences known. We are entitled to ask if recent changes in the welfare system requiring women with children to earn money, very often by raising the children of other women in a similar pickle, is the desirable solution to a core mammalian issue: how to protect mothers and babies from the ruckus of the wider system? That issue is at the mammalian core of the Christmas story, which is the centerpiece of the most popular celebration in the world. And meanwhile, expensively and elegantly trained women turn over their children to unlettered nannies from countries they've never been to and with whom they would not abide a fifteen-minute coffee break at a diner.

8. Let me break into a cloud of big trouble by suggesting that a vitamin essential in human arrangements is the opportunity

for gender-specific behavior. This simply means that on balance, there is good reason to expect that in various venues and for various reasons, males and females will act differently and in others they will act the same. The human nature project makes clear that sex differences are not necessarily the result of conspiracy, patriarchal oppression, formal inequity, and the like. They may be—and have certainly been in countless ways—still in a widespread distribution. However, as we look ahead, we would do well to expect the emergence of sex differences in any complex, ongoing social group, be surprised if there weren't any, and wonder why not.

9. Finally, a vitamin that energizes a community when it exists and suppresses it when it is fragmented or volatile is the necessity of communal protection. Whatever authority exists has to provide the citizenry protection from internal criminality, and more significantly and dramatically, from the threats of warfare. Governments like that of North Korea clearly fail to generate any sense of fairness and safety among its population, and depression and widespread alcoholism appear to be one clear result.

Here the human nature project suddenly expands into a large amphitheater potentially housing a chorus of the voices traditionally heard on issues of good government, fair government, peaceful government, and the like. But if we abide by Aristotle's "by nature" description even if the issue is huge, we are nevertheless not exempt from approaching it with the same candor and even confidence as when we consider ideal playgrounds for children.

Where does this fit in the larger currents of contemporary social policy? There are no easy answers to the myriad problems posed by the industrial system and the complex and vastly rambunctious stimuli it demands an upper Paleolithic former hunter-gatherer to attend to. But there is a model that has served quite well. During its early spurts and then during the effective triumph of the industrial way of life over all others, there was a reasonable assumption that appeared to work: that the environment was somehow self-correcting and able to absorb whatever was given to it.

Then a mild-mannered marine biologist named Rachel Carson wrote *The Sea Around Us*. This revealed that even the vast and ever-changing oceans were being polluted by the results of our new lives. The environmental movement began, and it became clear that the sheer size of the oceans and the expansiveness of our air could not themselves repair what we polluted. We were too clamorous and they were too fragile, too equipoised for an immensely ancient nonindustrial world.

Clearly there have been excesses—if insufficient successes too—to that environmental movement and too much baggage tied to the train. Nevertheless, the environmental movement is a necessary and conservative factor in defining our lives as well as an easy cause that attracts youngsters wearing bandanas.

My proposal here is both metaphorical and real, which is that we need now an inner environmental movement about our nature *in here* just as we have stretched and learned to comprehend the nature *out there*. Our internal nature is obviously more mysterious, more personal, more intricately connected to foggy fears and orchestral dreams. An Irish poet once announced "To the Blind, everything is sudden." But we know now about our history—and more interestingly and complexly our prehistorical story—which is, in fact, told in our genes. Therefore, it seems plain we should not be blind to the forces that permitted us to perdure, prosper, and remain part of human Aristotelian nature. □

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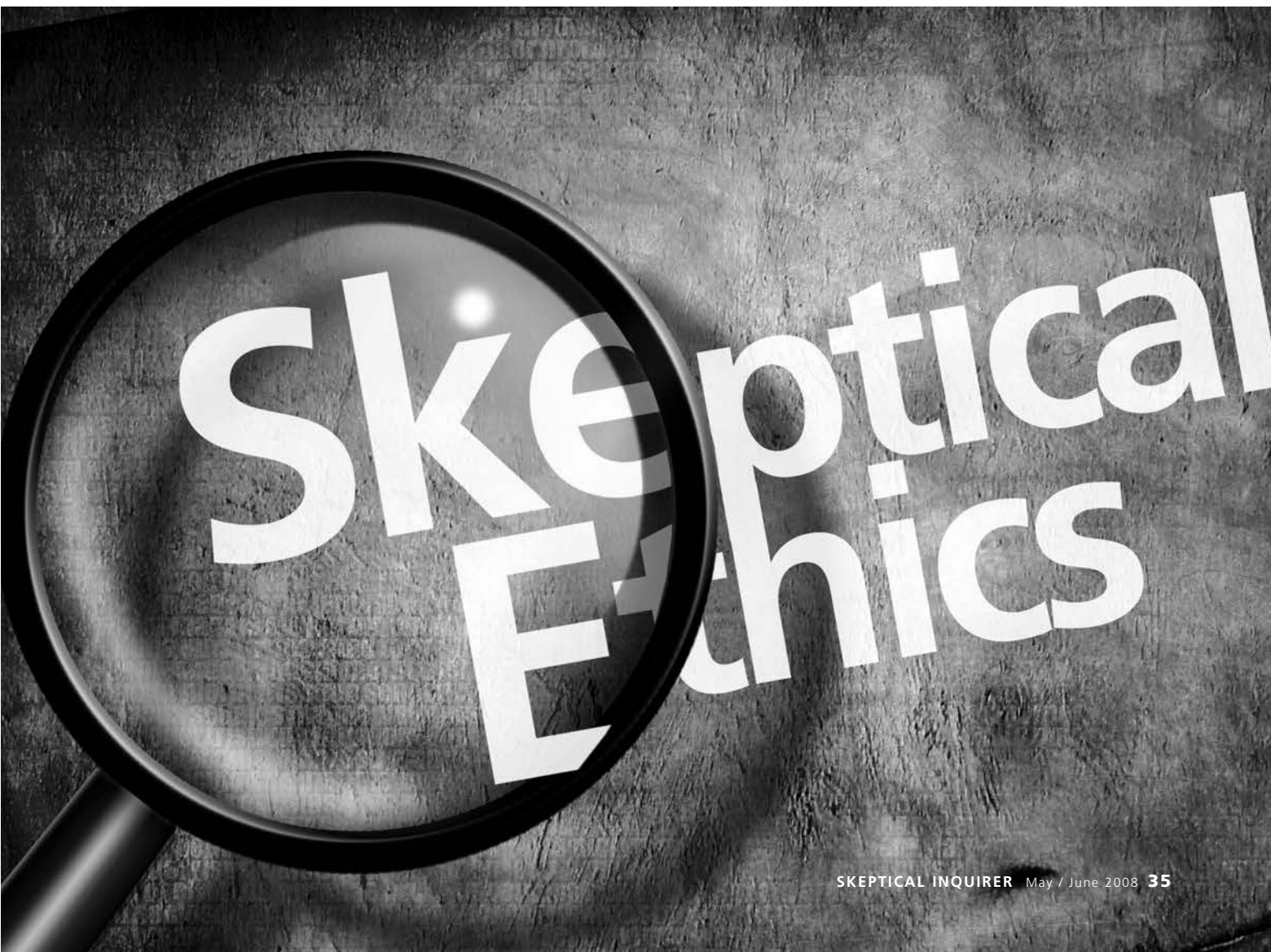
Skeptical Ethics—What Should We Investigate?

Skepticism has, as one of its major motivations, a deep ethical concern about the consequences of unwarranted beliefs. This ethical concern should begin with the first stage of skepticism—deciding what most needs to be investigated.

MARTIN BRIDGSTOCK



In early 2006, this magazine published a trail-blazing paper by David Koepsell, a leading secular humanist. Koepsell argued that it is time for skeptics to begin to develop their own ethical principles for investigation in the same way that scientists and other professional groups have done.

Most skeptics seem strongly aware of the ethical dimensions to their work. They regularly express horror at the sometimes disastrous consequences of paranormal belief (e.g. Levi 2006; Hoyt 2004) or disgust at the blatant falsehoods peddled by psychics and other gurus (Wiseman and Greening 1998; Nickell 2001). Occasionally, skeptics express concern at the conduct of other skeptics, arguing that they have breached ethical principles (Wendell 2006; Nickell 2006). Therefore, we need to clarify these concerns and produce a coherent set of ethical ideas.

Koepsell stresses that ethical principles have to be practical. They must provide guidance for skeptical investigators, not endless theoretical arguments about metaethics. So, he suggests, we should use case studies to develop our understanding of ethics and base skeptical ethics upon the example of ethics in science.

Having made that decision, Koepsell plunges straight into the ethics of skeptical investigation. He argues for the principles of equipoise (lack of bias), fidelity (commitment to the truth), and informed consent by the subjects of research. He also takes the view that compassion is a good guiding principle.

Koepsell's paper is a bold attempt to stake out some new territory, but there are at least three problems with it. First, if we completely avoid big ideas about ethics—metaethics—then how do we decide what kind of ethical rules to adopt and which rules are the most important? Koepsell favors concern for truth and compassion, but these sometimes have to be balanced against each other. For example, debunking a paranormal belief may lead to truth but may also cause great distress among believers. How do we decide which is more important unless we delineate a general view of our ethical concerns?

The second problem with Koepsell's approach is much simpler. He wants to base skeptical ethics on scientific ethics, but the contexts are quite different. Science is mostly carried out in laboratories and evaluated by other scientists. By contrast, skepticism operates in the community, where scientific rules and thought are poorly understood. Therefore, the kinds of ethical dilemmas faced are likely to be quite different. An example is evident in the widespread skeptical testing of dowsers. For the most part, dowsers appear to be amiable people who sincerely believe that they can find water by paranormal means. Groups such as the Australian Skeptics regularly subject dowsers to double-blind controlled trials, which the dowsers regularly fail (Australian Skeptics 2003). The dowsers then produce a series of incoherent explanations and continue on their way as before. In this kind of context, scientific principles may prove a very poor guide to action.

A third problem is that Koepsell seems to see ethics as beginning with the process of investigation. It need not. It can begin at a much earlier point: the selection of the topic to be investigated. In general, selecting a topic for research is not an ethical issue among scientists, but it can be a crucial matter for ethical consideration among skeptics.

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A Starting Point for Skeptical Ethics

A simple place to begin skeptical ethics is with the question, "Why are people skeptics at all?" There are, of course, many answers, some of which have nothing to do with ethics (for example, skepticism is fascinating and fun), but two ethical concerns keep recurring that can provide the basis for an ethics of skepticism.

The first ethical concern is that unwarranted paranormal beliefs can lead to disastrous outcomes and cause suffering and even death to innocent people. There are many examples of this. James Randi argued that Jim Jones had such a strong grip on the minds of his followers in part because they believed he could perform miracles (Randi 1980). This enabled Jones to lead them to an orgy of murder and self-destruction. Skeptics often point to cases in the news where children have suffered or died because of their parents' preferences for "alternative" forms of treatment (e.g., Hyde 2001). It is clear that a major source of ethical concern among skeptics is the understanding that poorly evidenced beliefs can lead to disastrous outcomes.

The second major ethical concern was argued in the founding days of CSICOP (now CSI, the Committee for Skeptical Inquiry, publisher of the SKEPTICAL INQUIRER). During the 1970s, there was a great flowering of alternative lifestyles and beliefs, many with a distinctly paranormal flavor. The founders of the modern skeptical movement have repeatedly written of their concern about these developments and their fear that public understanding of science is so poor that perhaps the very operation of science might be threatened by these new beliefs. This seems to have been one of the key reasons for founding CSICOP. For example, Paul Kurtz writes that in the 1970s, "I was distressed that my students confused astrology with astronomy, accepted pyramid power, Bigfoot, the Loch Ness monster, Kirlian photography, and psychic surgery without benefit of a scientific critique" (2001). Later in the same paper, Kurtz explains why science itself cannot perform this educational function: "science has become overspecialized . . . [which is] one reason why the scientific outlook is continuously undermined by antiscience and pseudoscience. . . . [S]pecialists in one field may not necessarily be competent to judge claims in others. . . ."

Partly for this reason, Kurtz believes that skepticism has a major role to play in a modern society which is largely ignorant of the true value and nature of scientific inquiry.

Echoes from Other Thinkers

It seems clear that these two ethical concerns—the disastrous effects of unwarranted beliefs and the danger of widespread ignorance of science—form the basis of much skeptical thought. They are not new concerns. Martin Gardner, in his seminal work *Fads and Fallacies in the Name of Science* (Gardner 1957, 6, 186–87), outlined both. Back in the nineteenth century, mathematician and philosopher W.K. Clifford, advocating an "ethics of belief," argued that believing without adequate evidence is "always, everywhere and at all times wrong." He gave two reasons. First, believing without adequate evidence was likely to lead to disasters and, second, holding unwarranted beliefs makes us more gullible and less able to distinguish truth from falsehood in the future (Clifford 1879). Clifford's arguments went into eclipse for about a century but now appear to be enjoying a minor revival (Zamulinski 2002). It seems clear that skeptics have been concerned about the dual consequences of inadequately supported belief for a long time.

There are other ethical concerns that skeptics sometimes present. For example, in 2004, astronomer Philip Plait addressed the Australian Skeptics' convention in Sydney, Australia. He resoundingly refuted the claims that the Apollo missions were hoaxes and told of how distressed he had felt when he learned of these accusations (see also, Plait 2002, 173). The Apollo moon missions were a staggering feat of technology and organization, and the courage of the astronauts is beyond doubt. The "Apollo Moon Hoax" claimants are seeking to deny NASA and the astronauts their rightful acclaim. Plait's outrage is both understandable and illustrates a different type of ethical concern over the injustice to NASA and the astronauts. Still, the most widespread ethical concerns are the two explained above: that unwarranted belief can lead to appalling suffering and can endanger our best methods of understanding the universe.

Developing an Ethics of Skepticism

The next step may seem obvious, but it is important. We should acknowledge that there are degrees of injustice among ethically or morally wrong acts. Some are usually worse than others. For example, consider criminal acts. Most of us would agree that shoplifting is a less serious crime than armed robbery. Armed robbery, in turn, is a less serious crime than murder. We could draw up a list of crimes in order of their seriousness. Though there would be some variation from person to person, it is likely that our rankings would be fairly similar overall.

In the same way, skeptics would probably agree that some paranormal beliefs are more dangerous than others. Holding certain paranormal beliefs is most likely to result in disaster and the suffering of innocent people. Holding others is most likely to endanger a general understanding of science and logical methods of reasoning. This distinction is important, as it gives us the basis for an ethics of skepticism.[1]

The basis for an ethics of skepticism then follows from a simple question. Which paranormal beliefs most merit investigation? We all know that huge majorities of people in western societies subscribe to paranormal beliefs. Skeptics are greatly outnumbered. Therefore, it seems logical that the most skeptical attention should be devoted to those paranormal claims which are regarded as the most dangerous. It is here that the most impact can be made, either in terms of relieving suffering or in terms of protecting the rational basis of modern science. Koepsell's ethical approach is set within the process of investigation and so neglects this crucial ethical question.

What should the priorities be? Which paranormal claims seem to merit investigation using these ethical criteria? I hope that my fellow skeptics will have thoughts on this. I offer my own as a contribution to the discussion.

It is horrific to learn of children dying of cancer and malnutrition because their parents could not distinguish well-evidenced from poorly evidenced claims about health. Clearly, the more skeptical work that can be done here, the better.

Judging by reports in the news, two types of belief seem to be most dangerous and cause the most suffering. One type is belief in modern alternative medicine, which claims to be a valid substitute for mainstream treatment. Again and again, one hears of children whose parents have rejected mainstream medicine—with which the prognosis was good—and opted for alternative "cures" that have not worked (Hyde 2001; Stickley 2002). It is horrific to learn of children dying of cancer and malnutrition because their parents could not distinguish well-evidenced from poorly evidenced claims about health. Clearly, the more skeptical work that can be done here, the better.

The second area where paranormal beliefs seem to cause great suffering is in the area of psychic counseling. As Goode has pointed out, people visiting a clairvoyant or psychic are likely to be troubled and vulnerable. Many psychic practitioners are probably compassionate and ethical. On the other hand, it is disconcerting that when four London psychics were presented with a vulnerable, distressed woman (in reality an actor), they all proposed highly expensive additional psychic remedies. They did not suggest counseling or medical help but began pushing their own high-priced measures (Wiseman and Greening 1998). The case of the young woman in Texas who found herself owing $21,000 to a psychic is another example (Davis 2005). Perhaps the worst is the case in Australia of a young woman who became addicted to "psychic hotlines" and ran up bills of $80,000 Australian (about $65,000 U.S.). She resorted to crime to pay for her addiction, thus spreading the misery further (Australian Skeptics 2007, 6).

Unwarranted belief in these two areas is causing a good deal of human suffering, and strong skeptical intervention—investi-

gating the claims and publicizing the results—would probably be beneficial. What about the second dimension, however? Are there paranormal beliefs that endanger the very basis of modern rational and scientific thought? By implication, virtually all paranormal belief attacks rationality, but one or two appear to be especially dangerous.

In western countries—particularly the United States—there is a system of paranormal belief that actively and explicitly seeks to undercut the basis of modern science. Its most recent guises of creation science and intelligent design seek to subordinate scientific inquiry to a particular set of religious beliefs. In my own state of Queensland, Australia, the creationists were at one time extremely powerful and on the verge of having their dogmas forced into school science lessons. It is therefore quite alarming to find in the founding legal documents of the Creation Science Foundation of Queensland, Australia, these statements:

> The scientific aspects of Creation are important, but are secondary in importance to the proclamation of the Gospel of Jesus Christ, the Sovereign Creator of the universe and Redeemer of mankind. . . . The Bible is the written Word of God. . . . Its assertions are historically and scientifically true in all the original autographs. . . .The account of origins presented in Genesis is a simple but factual presentation of actual events *and therefore provides a reliable framework for scientific research into the question of the origin and history of life.* (Bridgstock 1986, 81; emphasis added)

Similar commitments can be found in many creationist organizations. It also became clear during the recent Pennsylvania court case that the "intelligent design" movement is simply creationism in disguise (Forrest and Gross 2004). Quite explicitly, the goal of the creation scientists and their supporters is to alter the very basis of science and force it to conform to their religious opinions. Additionally, this approach has immense political backing—perhaps by a majority of the population in some countries—and an apparently endless determination to corrupt the teaching of science in favor of the imposition of its own dogmas. Despite repeated defeats and setbacks—the Overton and Jones rulings (1988 and 2006, respectively), defeat in the United States Supreme Court (Shermer 1991), and defeat in Australia (Bridgstock 1995)—the fundamentalists' determination apparently remains undiminished. According to the British magazine *New Scien-tist*, they are now seeking to establish an ostensibly "scientific" record of research that may convince a future judge that their claims are not pseudoscience (Biever 2006).

Given its massive backing, its charter to corrupt the basic nature of science, and the relentless determination of its proponents, it seems clear that the creationist movement—however it is disguised—must be regarded as a major danger to science and the basic functions of a rational democratic society. It clearly merits strong skeptical awareness and, where necessary, intervention.

We do not need to endorse the view that science is always right—it isn't—and we certainly should not put science on any kind of pedestal. It is simply an extremely valuable form of human activity which, judging by history, can easily be crippled or destroyed.

Some Limits to the Argument

So far, the theme of this argument has been simple. Skeptics are primarily concerned with the great danger that paranormal and other unwarranted beliefs pose to humanity in threatening the very basis of rationality, especially the functionality of science. If we accept that some beliefs are more dangerous in these respects than others, then it seems clear that skeptics should ensure that priority is given to analyzing those claims that are the most dangerous.

This should not be taken as an argument that all skeptics should devote their efforts to only these areas. As Clifford argues (1879), all unwarranted beliefs have the potential to damage our critical faculties. In addition, it would be absurd for, say, skeptical linguists or historians to abandon their own fields of expertise and feel obliged to enter others about which they know little. There is plenty to be done in their own areas. However, all skeptics should be aware that some beliefs are extremely dangerous, in both the senses outlined above, and we should see to it that they are critically examined by skeptical investigation.

A second important point is that the argument does not suggest that science is the only form of knowledge. All it implies is that science—and rational-critical thought in general—is invaluable to humanity, and should be safeguarded if threatened by any form of irrationality or faith-based pseudoscience. We do not need to endorse the view that science is always right—it isn't—and we certainly should not put science on any kind of pedestal. It is simply an extremely valuable form of human activity which, judging by history, can easily be crippled or destroyed.

A third point is that that the falsity of claims about alternative medicines and creationism cannot automatically be assumed. Skepticism is committed to the investigation of paranormal claims. As Koepsell said very clearly, the goal of skepticism is to find the truth. It is very likely that most claims made for the value of alternative medicines are false, and that the evidence produced for intelligent design or creationism is deeply flawed. However, this does not justify dismissing such claims without adequate testing and checking. Being skeptical means preserving an open mind and being prepared to look at new claims and evaluate new evidence. If we fail to do this, then we are falling into the same trap as the fundamentalists, and we deserve to be evaluated even more harshly since we should know better.

Note

1. Philosophically minded skeptics will immediately identify this approach as belonging to consequentialist ethics. There are many schools of consequentialism and many other approaches to ethics. However, this one appears the most straightforward, yielding useful results very quickly.

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The Journey from

RELIGION TO SCIENCE

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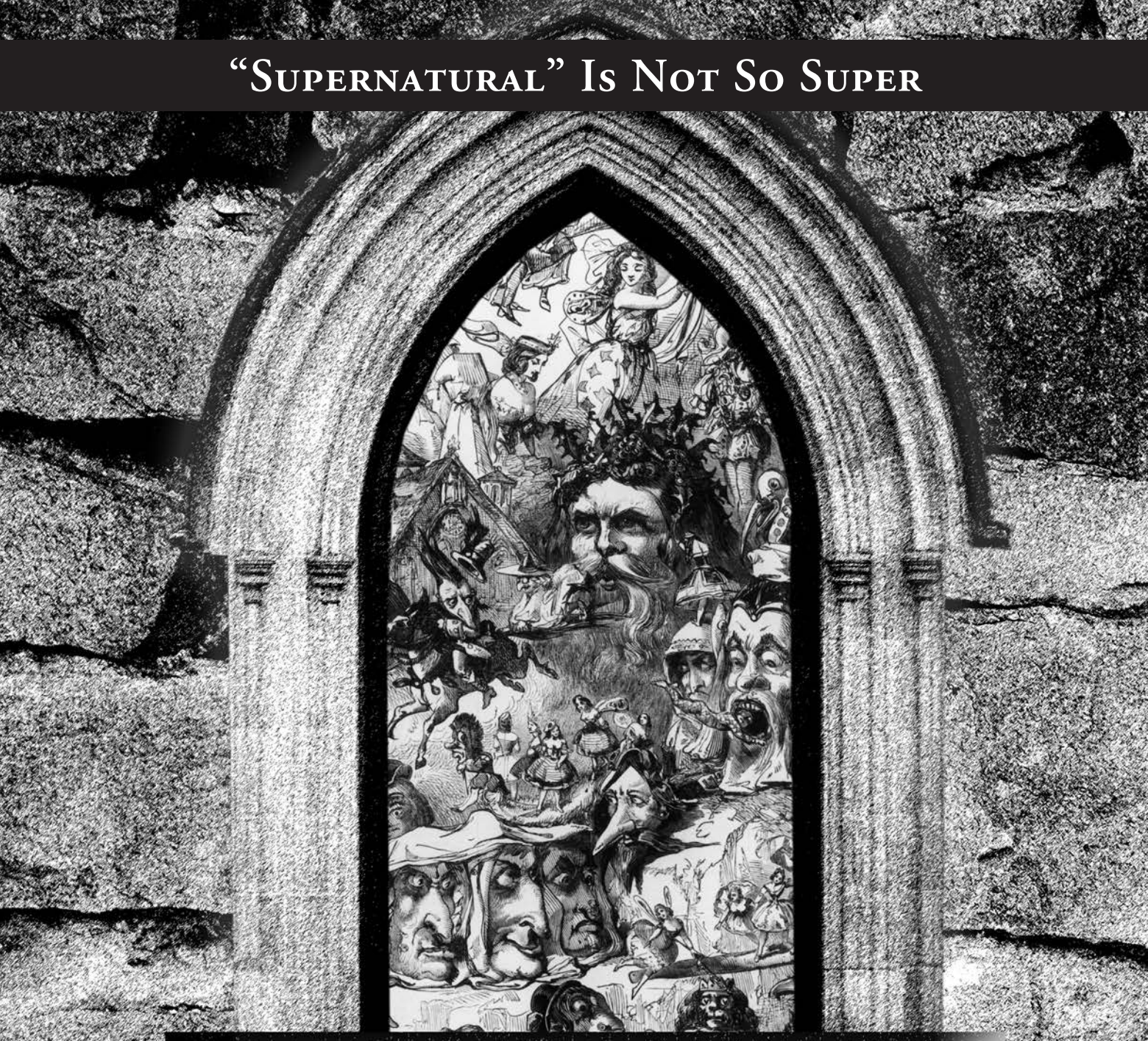

Does 'supernatural'—as a word or concept—mean anything? Can something be beyond science? If it exists, isn't it natural? Here we present three short takes on this often-used term of doubtful meaning.

If It Exists, It Is Natural

Both the word supernatural *and the concept behind it rest on shaky foundations. In fact, they fade to irrelevance in the light of modern, comprehensive views of nature.*

JEREMY M. HARRIS

The Random House Dictionary (2nd edition, unabridged) lists twenty meanings for the word "nature," and two of the most familiar lie at opposite ends of a sweeping hierarchy. In childhood, we are taught definition number three, which describes nature as the comfortably familiar terrestrial environment of flowers, trees, birds, bees, mountains, and rivers. Later we learn that scientists and philosophers elevate nature to a far more inclusive domain encompassing well nigh everything, expressed in definition number five as "the universe with all its phenomena." I propose that such comprehensive views of nature render the concept of supernatural existence both useless and pointless.

Although nature taken as "the universe with all its phenomena" embodies the broadest verifiable view of existence that humans have been able to discern, it is painfully apparent that many people have no qualms about casually, and often thoughtlessly, invoking beings and occurrences that supposedly reside beyond nature's purview. The magic buzzword used to accomplish this feat is "supernatural," which implies that a transcendent, inaccessible realm operates beyond nature and is in some sense superior to it. It is often further suggested that supernatural forces may have created the natural world and continue to control its destiny. Not unexpectedly, the supernatural kingdom has a sort of pecking order based on rankings of authority and gravitas, ranging from gremlins and gryphons at the low end to angels and deities at the high end. By any standard, the evidential track record for low-grade supernatural actors like demons and dragons is very poor, and most of us show that we understand this when the chips are down. For example, if our children sincerely ask whether such things exist, we will sincerely answer "no." Such prompt and confident insight makes it all the more strange that so many intelligent and perceptive adults are quite easily persuaded to accept the notion of high-grade supernatural entities, the most notable current example being Yahweh/Allah (hereafter, Y/A), the Judeo-Christian-Islamic deity acknowledged and worshiped by more than three billion people worldwide. So pervasive is Y/A's influence that he shows up even in the business world as perpetrator of the distinctly uncharitable "acts of God" that send insurance companies scurrying for cover.

The acid test for supernaturalness seems to be that something violates one or more physical laws, which is then assumed to mean that it will forever lie outside nature and hence outside science as well. The error in making such an assumption is the failure to recognize that every scientific principle we know of was once external to science and remained so until someone discovered and verified it. Indeed, as famously suggested by Arthur C. Clarke, any technology or phenomenon sufficiently beyond our current experience will appear indistinguishable from magic. By definition, science is a perpetually *unfinished* enterprise whose boundaries will expand as far as knowledge itself can take them and whose growth will continue as long as sentient beings are available to do the work.

Yet even in the face of such clear facts, there is a disappointingly prevalent tendency to regard science as trapped in a fixed and finished corral surrounded by mysterious phenomena it can never comprehend or incorporate. The disconnect here lies not in the perfectly valid concept of mystery but rather in the false conclusion that things not yet understood or explained must be unphysical and hence unnatural. As knowledge progresses, newly discovered and comprehended aspects of the natural world not only account for more and more of what was formerly considered "beyond science," but also illuminate questions at least as deep, subtle, and meaningful as any raised by religious or supernatural speculations. The strange properties of black holes and dark matter, the counterintuitive time-stretching of relativity, the built-in uncertainty of quantum events, and the relentless evolution of living things over billions of years make the rather naive and pedestrian "miracles" of scripture seem crude and unimaginative by comparison. Even the traditional epitome of nothing, a perfect vacuum, is now under consideration as an incredibly fine-grained, foamlike matrix, a roiling stew in which matter and energy continually exchange roles. Hence it appears more and more likely that matter and the space it occupies are not separate, decoupled entities. As the universe expands, space-time inflates with it and the question of what it expands "into" may have no meaningful answer. Far from being limited or short-sighted, the extended effort of our species to comprehend the power and scope of material existence has led to more advances in understanding (and also to more helpful, practical results) than any other form of human endeavor.

But wouldn't the argument presented thus far collapse the moment it came up against even a single incontrovertible supernatural event? Well, let's do a thought experiment. Suppose that tomorrow a young man claims to be able to turn water into wine and creates a sensation by proceeding to do so. He also cures the sick, raises the dead, and feeds the entire audience of *The Late*

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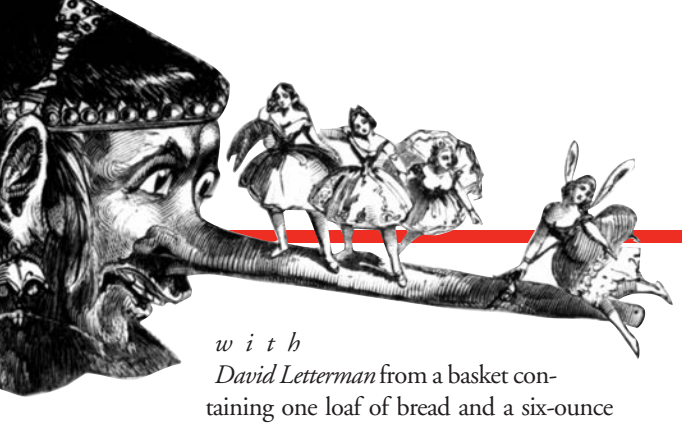

Show

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David Letterman from a basket containing one loaf of bread and a six-ounce can of Starkist tuna. As the weeks and months go by, no one can fault him. Committees of scientists announce that the things he does really happen, but they can't figure out how he accomplishes them. Religious factions, predictably enough, take to arguing among themselves. The Evangelicals are ecstatic and more than ready to ascend. The Jews and Muslims form a precedent-breaking "Coalition of Concern" which issues scholarly bulletins explaining how miracles can be genuine without being divine. The Buddhists point out that reality is merely a way-station on the path to fully enlightened illusion. Eventually a blue-ribbon panel of skeptics is called in but declines to draw any final conclusions until the young man spends a fortnight under close scrutiny by the Amazing Randi. Ultimately, to the consternation of rationalists everywhere, even Randi pronounces him genuine.

If similar events actually occurred and we were stuck with a legitimate miracle worker, what would be the most reasonable course of action? Provided comprehension and edification were the objectives, wouldn't sending the young man back to the scientists be the best choice? They would begin their in-depth study by noting that in every case, the miracles involve an unexplained presence or absence of physical events—after all, you can't break a natural law any other way. They would understand that anything real must function in *some* fashion and that declaring a phenomenon "supernatural" simply cuts off all access to further enlightenment. As already noted, strangeness, newness, and inexplicability are not reasons to conclude that phenomena lie outside nature.

Designating something as supernatural adds absolutely nothing to our knowledge of it, hence we may as well declare the thing *mimsy*, *googly*, or *pixilated*. The descriptor "supernatural" lacks, to borrow a term from the law, probative value, because it is powerless to advance an argument and carries no more information than a shrug. In more formal terms, it may be discarded *without loss of generality*, meaning that nothing substantive is lost or excluded by removing "supernatural" from the roster of useful adjectives.

It is important to bear in mind that putting the idea of supernaturalness or "existence beyond nature" in its proper place involves no meaningful prohibition or censorship of ideas. Zeus, Apollo, Y/A, angels, devils, demons, eternal souls, and the Headless Horseman are as free as ever to compete for our attention and belief. The only change is recognition that if they are real (if their existence reaches beyond our imaginations), then the ever-growing portion of nature that is known and understood will eventually include them.

The Nature of the Supernatural

DANIEL R. ALTSCHULER

It is common to argue about the supernatural. Indeed, entire volumes are written to discuss such things as the existence of "a superhuman, supernatural intelligence who deliberately designed and created the universe and everything in it, including us" as considered by Richard Dawkins in his delightful and influential book *The God Delusion* or as discussed by Daniel Dennett in his excellent *Breaking the Spell: Religion as a Natural Phenomenon*, where we read about "a social system whose participants avow a belief in a supernatural agent or agents whose approval is to be sought."

According to Merriam-Webster the supernatural is 1: of or relating to an order of existence beyond the visible observable universe; *especially*: of or relating to God or a god, demigod, spirit, or devil; 2a: departing from what is usual or normal especially so as to appear to transcend the laws of nature; 2b: attributed to an invisible agent (as a ghost or spirit).

In the Spanish-speaking world, according to the Dictionary of the Spanish Royal Academy, *sobrenatural* is something that exceeds the terms of nature (*Que excede los términos de la naturaleza*). Kant describes übernatürlich in the exhaustive Deutsches Wörterbuch by Jacob and Wilhelm Grimm this way:

> [The] Supernatural occurs insofar as the nearest cause is outside of nature, or when just the way that the forces of nature act in this case is not contained in the laws of nature (übernatürliches findet statt, insoferne die nächste wirkende ursache auszer der natur ist, oder wenn auch nur die art wie die kräfte der natur auf diesen fall gerichtet worden, nicht unter einer regel der natur enthalten ist).

But what does *supernatural* really mean? What does it mean to exceed the terms of nature, appear to transcend the laws of nature, or have a cause outside of nature? It is implicitly assumed that it is possible to be beyond or outside nature, but I propose that this is just an illusion.

Certainly there are phenomena that at any particular time in history appear to transcend the known laws of nature. Before Newton it was not understood why the planets moved, and before quantum mechanics it was not understood how an atom could be held together. Were the motion of planets and the structure of atoms mediated by the supernatural? One of the current "mys-

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teries" in biology is the emergence of life. We simply do not (yet) know how it happened, and it is easy for some to invent a "supernatural" cause. But again, this is meaningless. Whatever it turns out to be, it will be a natural phenomenon, which might require a revision of our understanding of the way nature works, as has happened in the past.

Are ghosts (if they exist) supernatural? How can anyone claim to see them, feel them, or detect them if they are not part of nature? If ghosts exist, they are natural and subject to all the rules of nature and evidence that we understand. We might need to revise our understanding of the laws of nature in the light of what the existence of ghosts might tell us (in a metaphorical sense), but ghosts will be natural rather than supernatural.

My point is that anything that is or happens is part of the world, and in this sense natural, even in the case of a creation by us (which we call artificial). It makes as much sense to talk about the supernatural as to talk about something *outside* the universe. If there is a deity, then it is natural and subject to all the means at our disposal to investigate its nature (not its supernature). And if it is not part of nature, then it does not exist, and we need not bother any longer. By using the word "supernatural" we unwittingly accept the possibility of such things. I propose that the word is nonsensical and if used at all it should always be done with caution and perhaps within quotation marks.

Some Splainin' to Do

GEORGE ENGLEBRETSEN

During his John Dewey Lecture ("A Life in Philosophy") to the American Philosophical Association in 2006, Nicholas Wolterstorff, a well-respected, first-rate philosopher, said, "Religion . . . is natural to human beings; atheism is what needs explaining." Well, in spite of my generally high regard for Wolterstorff's half-century of philosophical work, I believe he's got it exactly wrong here. I would say that atheism, not religion, is natural. As Ricky Ricardo would say, "religion's got some splainin' to do."

Atheism is just part of a more general worldview, one in which the natural world and all its constituents are objects of wonder and curiosity, worthy of deep and careful study for both practical and nonpractical reasons. Science is simply the business of (1) finding out as much as possible about the natural world, (2) formulating theories for explaining what is known about it, and (3) revising both information and theory in light of further investigation and reason. This kind of *naturalism* is (how else to put it?) natural. In this worldview, the world and its constituents are, for the most part, quite independent of us, of what we believe, of what we say, of the ways we wish things were. There it is: the way it is whether we know it or not, whether we like it or not. Moreover, this kind of naturalist attitude toward the world and all that's in it is natural to us in the same way that hunting is natural to wolves and hiding is natural to cockroaches. Fish gotta swim, birds gotta fly. They can't help it; it's in their natures. Our nature is different. As Aristotle said, "All men by nature desire to understand." Most children have an innate curiosity about the natural world. We follow bugs in the garden. We wonder at the variety of birds, flowers, snowflakes. We are tickled by the caterpillar, puzzled by its cocoon, and awestruck and dazzled by the butterfly that finally emerges. We are amazed by magnets and magic shows. We marvel that numbers just go on getting bigger forever. We are born scientists. It's in our nature. The supernatural comes later.

Religion is also just part of a more general worldview, one in which the natural world is, in one way or another, subordinate to the supernatural. In this view, the supernatural is both wondrous and delightful (or sometimes frightful). Often, the religious worldview sees the careful, objective approach to the natural world as worth less or even detrimental to the amorphous, less critical, less objective, but more personally satisfying acceptance (based on what? faith? sophistry? snake oil?) of the supernatural. Led by a well-meaning

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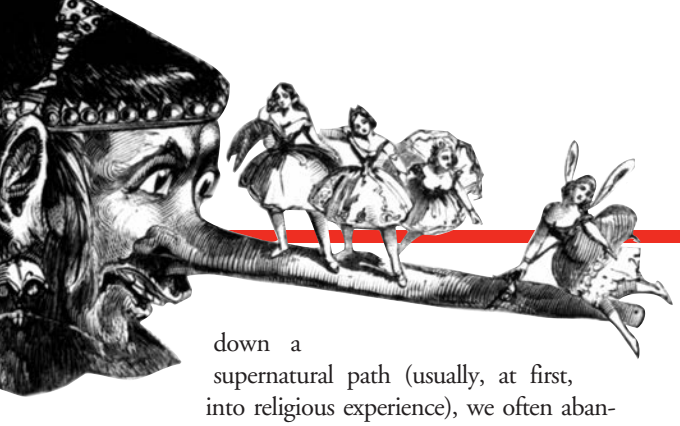

"Supernatural" Is Not So Super

down a supernatural path (usually, at first, into religious experience), we often abandon our natural curiosity and sense of wonder about the natural world. Any residual delight is channeled in a new direction. Any awe one might still feel about the natural is simply a shadow of the far more wonderful, more satisfying supernatural.

Too often, the result of our innate, naturalist attitude being suppressed, subordinated, or substituted by the supernatural attitude is the atrophy of objectivity, science, and reason. We become suspicious of those who still hold on to naturalism. We fear what we refuse to understand (stem cell research, gene therapy, genetically modified food sources). Accepting the supernatural (alternative medicine, crop circles, virgin births) is easier—and often more fun. Why investigate, why aim for critical understanding, why reason, why think? More generally, why risk uncertainty when absolute certainty is so close at hand? The alternative is a lot less work, and isn't everyone else (except those narrow-minded scientists and fundamentalist atheists) doing it?

Face it, the supernatural attitude is not natural. It's nonsense based on nonsense. And it's often dangerous. As Voltaire wrote, "Anyone who can make you believe nonsense can make you commit atrocities." The atrocities committed in the name of the supernatural, especially in its many religious guises, are legion. Religion, not atheism, does indeed have lots of splainin' to do—unfortunately, explanation is not its strong point. □

CREATIONIST PEER REVIEW
Continued from page 19

in "Microbes and the Days of Creation," by Alan Gillen (predictably, from Liberty University, the fundamentalist college founded by Jerry Falwell), we learn that "ongoing research, based on the creation paradigm, appears to provide some answers to puzzling questions," such as "where do microbes fit into the creation account? . . . Were they created along with the rest of the plants and animals in the first week of creation, or were they created later, after the Fall?" In a show of pure scientific balance, the author admits that "the answers to these questions are not explicit in Scripture, so the answers cannot be dogmatic." Gillen ends up postulating that "microbes were created as 'biological systems' with plants, animals, and humans on multiple days [during creation week]," because as we well know, "God made His creation fully mature, and complex forms fully formed." Amen.

No need to go any further with this nonsense, as good as it is for a chuckle or two. The real question is: why? Why do creationists feel compelled to have a "science" museum, a peer-reviewed journal, or, in the case of the Discovery Institute Intelligent Design think tank, a recently established (but very secretive) research laboratory? Could it be science envy? Indeed, even more broadly, why do creationists feel compelled to argue their case at all? Is faith not enough? When I was living in the southern U.S., it often happened that someone would engage me in an impromptu debate. They were certain that I would see the light of (their) overwhelming reason and renounce Darwin on the spot. When instead I managed to put them on the defensive, they would play with evident pride the faith trump card: "I believe in spite of evidence." OK, fair enough (if more than a bit moronic), but then why did you just try to argue with me? Arguing, teaching, and doing research means that one accepts the rule of rational, evidence-based discourse. And yet creationists want to have it both ways and promptly retreat behind the all-encompassing shield of faith when things get rough.

I suspect that creationists, deep down, have internalized the much-despised, secular ethos that one must have sound reasons for one's positions, and they sense that rationality isn't on their side. They seek respectability through fake museums and peer-reviewed journals because they know that the Middle Ages are over, and just shouting one's faith in a god is not going to cut it anymore (modern society's spurn of stoning and burnings at the stake doesn't help either). Indeed, the very progression seen during the twentieth century—from the Scopes to the Dover trials, from young Earth creationism pretending to keep evolution out of public schools entirely to so-called "intelligent design" (which accepts a lot of science, including natural selection) begging for a bit of classroom time—is a path of constant retreat away from biblical literalism, inching ever closer to modern science. The most advanced of the creationist ilk, the ID supporters, have progressed intellectually to the early nineteenth century (after Paley but before Darwin), while young earth creationists are still trying to come to terms with the Enlightenment. Perhaps if we wait another century or two they'll enter early twentieth-century science and make peace with Darwin. Now, that would be a miracle to behold.

□

Merchandising God: The Pope Tart

Jesus on a tortilla? The Virgin Mary on a cheese sandwich? The "Nun Bun"? With eBay's emergence, there has been a fervent resurgence of pseudoreligious pareidolia. One author posted her own joke-hoax "Pope Tart" on eBay and watched the results.

KAREN STOLLZNOW

The following scene about religious relics appeared in the British comedy *The Black Adder*.[1]

BALDRICK: Moving on to relics, we've got shrouds from Turin; wine from the wedding at Cana; splinters from the cross [*his finger gets a sliver from one of the splinters*]; and, of course, there's stuff made by Jesus in his days in the carpentry shop: pipe racks, coffee tables, coat stands, bookends, crucifixes, a nice cheeseboard, fruit bowls, waterpoof sandals . . . [*picks up a piece of wood that's partly carved*] Oh, I haven't finished that one yet.

PERCY: But this is disgraceful, My Lord! All of these are obviously fake!

EDMUND: Hah, yes!

PERCY: But, but how will people be able to tell the difference between these and the real relics?

EDMUND: Well, they won't! That's the point!

PERCY: Well, you won't be able to fool everyone! Look [*he takes a red cloth from his sleeve*]: I have here a true relic.

EDMUND: What is it?

PERCY: [*unwraps the cloth*] It is a bone from the finger of Our Lord. It cost me 31 pieces of silver.

EDMUND: Good lord. Is it real?

PERCY: It is, My Lord. Baldrick, you stand amazed.

BALDRICK: I am—I thought they only came in boxes of ten.

From holy handkerchiefs to sacred socks, relics are artifacts that are attributed to deceased religious figures. The label covers a broad range of memorial articles, usually classified into three groups. First Class Relics include physical remains, such as the bones or hair of a saint. Second Class Relics are the possessions of an iconic figure, the objects intimately associated with them. For example, the "Veil of Veronica" is a sacrosanct scarf, supposedly used to wipe the sweat from Jesus' brow as he carried the cross, imprinting his image on the cloth. Third Class Relics are do-it-yourself relics, items that are sanctified when they have touched a deceased saint; or items that have a homeopathic holiness, having been brought to the shrine of a saint. Many churches still venerate relics as commemorative objects, and like talismans, they are often credited with miraculous powers, such as the ability to heal or to bring good luck.

Thousands of alleged relics are in existence. A veritable Frankenchrist could be resurrected from all of the Jesus relics alone: bones, hair, teeth, tears, blood, umbilical cords, clothes, and shrouds (with interesting implications for modern-day cloning). The Vatican is reluctant to validate relics, and who can blame them when there are often multiple claimants? There are at least three Holy Prepuces in existence . . . yes, the foreskin of Jesus. Although, this matter was settled when seventeenth-century philosopher Leo Allatius convincingly argued that the true Holy foreskin ascended into heaven with Jesus and formed the rings of Saturn.[2]

Reputedly, there are thousands of fake nails from the True Cross. There are so many alleged pieces of the crucifixion cross that sixteenth-century humanist Erasmus is credited with two impious punch lines: 1. Jesus must have been crucified on a whole forest, and 2. There are enough pieces of the cross to build a ship (Noah's Ark perhaps?). As Baldrick's scheme suggests, the sale of fake relics was big business during the medieval era. Thomas Serafin, of the International Crusade for Holy Relics, cites this little yarn:

> During the Middle Ages, a traveling monk hoping to purchase a saint's relic for his monastery found little success and [illegible]
>
> merchant who offered to sell him the skull of John the Baptist. The monk was dumbfounded. Hadn't he just seen the skull of St. John in a church during a recent visit to France? "That was the skull of St. John when he was a child," explained the merchant. "This is his skull when he was an adult."[3]

This reads like skepticism, but Serafin still believes in the existence of "legitimate relics" and is a self-professed "Knight of the Last Crusade for Holy Relics." Their quest is "attempting to revive the Cult and veneration of Holy Relics" (through exhibits, retreats, and conferences) and "rescuing and protecting Holy Relics from profanation and neglect." They seek to "continue to help locate and rescue genuine relics that have fallen into pawn shops and occult stores and bring to the attention of the local Ordinary (Bishop) any Catholics selling relics in stores, mail order, or the internet."

Many churches still house supposedly "legitimate" relics, and in these surroundings, they hold credibility for the believer. These churches are unwilling to authenticate their relics using dating methods; not because this would discredit their claims, but because it would damage the fragile goods! While the Vatican still tacitly approves of the display of relics, they oppose the sale of sacred items; so much so that they have a name for the act: *simony*. But this rule only extends to First and Second Class relics. So, with these restrictions in mind, how is God merchandised today?

Religious apparitions seem to form a Fourth Class Relic category, replacing the Holy Grail as a modern-day beacon for the faithful. In popular usage, *apparition* refers to a broad range of miraculous phenomena, including physical "materializations," i.e., reported visions of Jesus or the Virgin Mary (but never God). An apparition can also be the manifestation of an iconic figure through a statue or image, e.g., a weeping statue of the Madonna, oil seeping from the image of a saint, or "bleeding" stigmata. An apparition can also be an illusion—an object perceived to bear the likeness of a religious figure. For example, the "Nun Bun," a cinnamon bun that "resembles" Mother Teresa (for an excellent metamorphosing image, visit: www.indiana.edu/~jkkteach/P335/nunbun.html). Ironically, on Christmas day 2005, the Nun Bun was stolen from the Nashville, Tennessee, coffee shop where it was displayed. The bun and thief are still at large.

To the skeptic, this latter category is known as *pareidolia*. This term refers to the phenomenon whereby a vague, random stimulus is perceived to resemble a specific, recognizable form, usually an animate or iconic figure. Whether we see a face in the clouds or a shape in tea leaves, our instinctive ability to respond to pareidolia is the whole basis of the Rorschach ink blot test (although it doesn't necessarily reveal our deepest psyche. This psychological analysis is an interpretation of an interpretation).

Infamous examples such as the "Face on Mars," the "Pete Townshend potato," and the "Bob Hope potato chip" confirm that this phenomenon is by no means restricted to religious themes. Perceiving pareidolia is intuitive profiling, our propensity to search for the familiar in the unfamiliar. Carl Sagan links the facility to a survival mechanism.[4] We recog-

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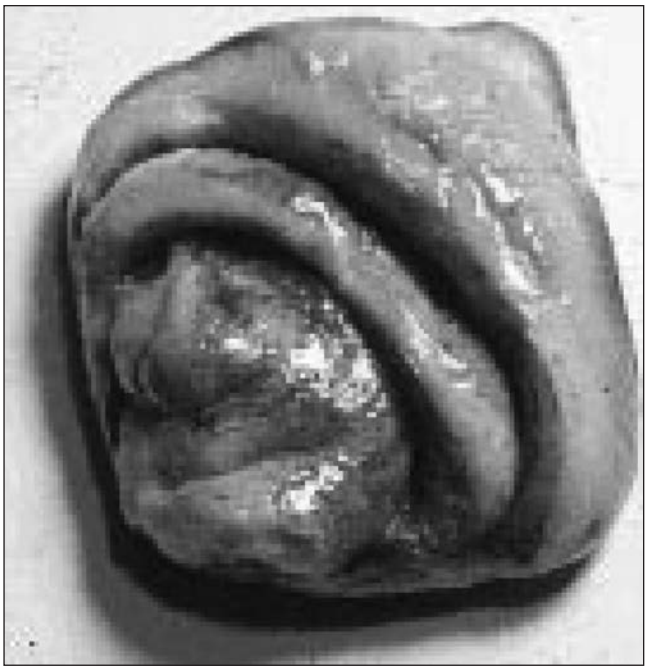
nize similarities and often superimpose a mental image onto a visual image. We discover patterns in nature and match facial features with familiar faces. Think about the times you've temporarily mistaken a stranger as your boss in a crowded place after taking an illicit "sick day" from work.

To illustrate the random nature of pareidolia, Phil Plait writes about his experience of having a shower with Vladimir Lenin. On an otherwise normal day, Phil was washing away his sins. Upon stepping out of the shower, his eyes were drawn to the shower curtain. What he saw sent a shiver down his spine: "There was a face in the shower curtain, looking directly at me." Unbeknown to Phil, he'd had a voyeur during his shower, none other than the revolutionary Lenin. It was a communistic miracle! Did the Bolshevik leader bring a message of socialism to this consumerist society? Was he bringing the Iron Curtain to the shower curtain? Phil quickly admits that this was no paranormal event but a pattern formed by water droplets on the shower curtain. He vows not to set up a Lenin bathtub shrine but marvels over the uncanny likeness, "and let me tell you, my Lenin face is the best example of this phenomenon I have *ever* seen. Usually, the resemblance people see is vague at best." For more of this tale, visit: www.badastronomy.com/bad/misc/lenin.html.

While pareidolia is an intrinsic phenomenon, something we might be "hard-wired" for, the observer's reactions can differ greatly. Bob Carroll states that "most people recognize illusions for what they are, but some become fixated on the reality of their perception and turn an *il*lusion into a *de*lusion."[5] Some people were amused at the resemblance the sweet pastry bore to Mother Theresa, while others made pilgrimages to the "Virgin Mary" who "appeared" on the wall of the Kennedy Expressway, Chicago, in 2005. In their thousands, followers kept vigil and paid homage with prayers, candles and flowers, weeping before the image and disrupting traffic until city council staff painted over the salt stain. Pareidolia is truly in the eye of the beholder. Many interpreted the hooded shape as the customary pose of the Madonna, but others likened the stain to a certain part of the female anatomy!

Australia had its own Antipodean visitation in 2003, a Marian apparition at Coogee Beach headland. The "Coogee Madonna" was an optical illusion, sunlight reflecting off a crook of a fence post, creating a shadow perceived by some as the veiled image of the Virgin Mary. The cliff turned into a shrine, the faithful waited in the afternoon sun watching for the image, and the surfers watched them. Several years later, a group is lobbying to have a church built at the beachside. Fortunately, the Catholic Church in Sydney is less convinced.

True to the Bible prophecies, Jesus returned to Earth—just not in the form that everyone expected. Jesus "appeared" on a flour tortilla in New Mexico in 1977 (near Roswell, if anyone wants to dabble in confirmation bias). Although the "apparition" looked like a simplistic, rubber-stamped image, the owner enshrined it, and to this day, thousands of the faithfully credulous make the pilgrimage to view this "miracle." This visitation seemed to popularize religious pareidolia. In quick succession, Jesus made appearances on



The Nun bun.

foodstuffs throughout the U.S. But for awhile, the occurrences lessened, or at the least the media fascination ebbed. However, with the emergence of eBay.com, religious pareidolia has made a fervent resurgence. In the beginning, God created a sandwich.

In 1994, Diana Duyser of Hollywood, Florida, made a fried cheese sandwich, but this wasn't just any old sandwich.

> When I took a bite out of it, I saw a face looking up at me, it was Virgin Mary starring [*sic*] back at me, I was in total shock, I would like to point out there is no mold or disingration [*sic*].

Duyser resisted eating any more and preserved the sandwich in a clear, plastic box with cotton balls, keeping it on her night stand. She claimed that the divine sandwich brought her "many blessings" over the years, including a casino windfall of $70,000. Despite the divine powers of the sandwich, Duyser generously decided to "share this with the world," or at least the highest bidder. And so, a decade later, she listed the sandwich on eBay: www.goldenpalaceevents.com/ebay_archives/grilledmary01.html. The bidding quickly rose to $28,000 before eBay disqualified the auction. They reinstated the auction when it became apparent that they would receive their listing fee and commission, "There's nothing to indicate that the seller isn't willing to give up this cheese sandwich to the highest bidder," said a spokesperson for eBay. The item generated phenomenal worldwide publicity, receiving about 2 million viewing "hits" before it was sold for a whopping $28,000 to publicity hunters, online casino Goldenpalace.com.

Goldenpalace.com is notorious for collecting infamous online auctions. With a penchant for paranormal pareidolia, they also purchased the Weeping Jesus Rock for $2,550, the Holy Pretzel for $10,600, the Pope's Hat Dorito Chip for $1,209, the Holy Pierogi: Fried Image of Christ for $1,775, and the Jesus Shower Plaster for $1,999.99. Milking the

The $28,000 miracle, Virgin Mary, grilled-cheese sandwich.

Cheese sandwich for all it's worth, Duyser also listed the "Official Holy Pan that made the Grilled Cheese Sandwich." To add to their collection, Goldenpalace.com snapped this up for a cool $5,999.99. Surely the kitchen sink will follow. (For other bizarre purchases, visit: www.goldenpalaceevents.com/auctions/).

Is this a good example of pareidolia? While we don't have any genuine images of the Virgin Mary, we have many depictions of her. From a cultural perspective, these portrayals form our modern ideal of purity. However, the image on the sandwich isn't of a demure woman with her gaze cast downwards; the caricature-like image shows a flirty, outward stare that has been compared to Marlene Dietrich, Carole Lombard, or a Cupie doll. The image on the sandwich doesn't resemble our "idea" of how Mary looked, but pareidolia is often suggestive. Duyser either believes that this "is" the Madonna, or she wants us to see it her way. Whoever made this yeasty visit—Mother Mary or Mother Nature—it's a curious phenomenon that deserves investigation.

Religious icon or movie star, is the image real or a hoax? Typically, pareidolia is imperfect. The "Face on Mars" doesn't resemble all of the natural features of a real face; it is a vague protrusion with an indistinct "mouth," "nose," and "eyes." Our Lady of Watsonville, an "image" of the Madonna in Watsonville, California, is an oval discoloration on a tree, a "stooped" shape that could be a penguin as much as Mary. However, the Cheesy Virgin is an uncharacteristically distinct and sharp image. I had the good luck to examine the sandwich with CSI Investigator Joe Nickell at The Amaz!ng Meeting in Las Vegas in 2005. The supposedly ten-year-old toast "relic" on loan from Goldenpalace.com was framed behind thick glass and came complete with its own security guard. Nickell is reluctant to accuse Duyser of any trickery, but I'm not. But does opportunist equal con artist? Any further commentary would necessitate a few scientific tests; until then it remains a curdled piece of pop culture.

The Virgin Mary Cheese Sandwich became a great gimmick. E-bayers began capitalizing on the notoriety of the Holy Sandwich, using the name to generate search results for their more secular listings.

L@@K! Bicycle and Virgin Mary toast!
Virgin Mary CD of Elvis classics!
Virgin Cheese Sandwich leather coat—preloved

Imitation is the sincerest form of greed. The fiduciary success of the sandwich had spawned a new industry of "simony" that was becoming known as E-Simony, the trafficking of "relics" through Internet auction houses. Within days of the sale of the Holy Toast, a friend called. Had I heard about the Holy Cheeto? A search online revealed this lame piece of pareidolia. A fellow was auctioning a Cheeto chip that supposedly resembled "Jesus' legs on the cross." In actual fact, the chip resembled nothing more than what it was: two Cheeto chips melded together in a factory line anomaly. The owner had just undergone heart surgery and with his diet choices was well on the way to his next operation.

> When I walked in the convient [*sic*] store, there was a line because everyone was trying to hit the jackpot for the lottery. . . . I went to wait in line and was standing near the bag of chips. I was looking at the chips and one bag of Cheetos caught my eye. I decided to buy the bag of Cheetos since it stood out from the rest. . . . I looked in the bag of Cheetos and found this piece of Cheeto that was shaped like legs. . . . Since this was found the night before Easter, I believe that this is the legs of Jesus. I believe that the legs represent him walking and carrying the cross when he was crucified and that it is a sign that he will be back. I am recovering from surgery and I believe that he was watching over me when I was taking a walk round the block and to make sure that I got home safely.

In small print, the owner admits that the "legs are novelty only," but adds, "I only asked [*sic*] that you bid seriously on this auction." Strangely enough, people *were* bidding on this ridiculous "relic." Was this kitsch value or real belief? And what were people thinking about the recent spate of pareidolia?

My idea was a pre-emptive strike against pareidolia. In the religious world, the most recent and notable event was the death of Pope John Paul II. This is the kind of significant event that believers link to apparitions, so this was a believable theme. The death of Mother Theresa triggered a plethora of "miracles," the path to beatification. But where was I going to find a genuine piece of pareidolia on demand? I would have

to fake it. While we might think that apparitions are often contrived, like "weeping" images or "bleeding" statues, Nickell states that "deliberate simulacra hoaxing seems rare."[6] Nickell once expertly imitated the Shroud of Turin in an experiment (the Shroud of Bing . . . Crosby), but I am no forgery artist.

I decided that my medium would be a Kellogg's Pop Tart, ordained to be the "Pope Tart." So, I had the witty name but no "apparition." How would I make the "relic"? I made some hopeless attempts at fashioning a believable image. Like a malevolent Martha Stewart, I tried to sketch an image onto the tart. I only succeeded in cracking the brittle surface. Ingeniously, I dampened the next tart, to press the image onto the surface, but it became too soggy. Then it dawned on me: I didn't have to do a thing. Auto-suggestion is part of the "miracle" of pareidolia, and people would convince themselves! Confirmation bias would do the rest. I took a few digital images of an untouched pop tart (the last one in the pack after my fumbling experiments). I decided to use a blurry image to add an element of uncertainty. Hilariously, the photo had an "orb" in the right-hand corner. I positioned this next to a photograph of John Paul to subtly coax people to perceive similarities. The natural markings of the tart, when studied closely, appeared to reveal an indistinct face-like shape. Although, it looked more like Edvard Munch's *The Scream* than the Pope. . . .

And so, I listed the following auction to the "Relics" category of eBay:

The Pope Tart
Papal Pop-Tart
Genuine modern-relic!
Bears likeness of His Holiness Pope John Paul II!!

> We have all heard of the recent spate of religious icons, the Virgin Mary Grilled Cheese Sandwich, the Madonna and Child Pretzel and the more recent Holy Cheeto. To be honest, I was skeptical about it all. I had pinned the owners as either out to make a fast buck or just delusional! Then I remembered the words of Christ; "Why do you doubt, O ye of little faith?" (Mt 14:30). I suddenly understood the true purpose of this phenomenon! This is God's way of reaching the modern person! In today's jaded world, where people are turning their backs on the Lord, He has found a solution! God is trying to reach people through the simple, the mundane, the ordinary. If people won't come to Him, He will appear to them . . . and in a form they can truly stomach!
>
> This week has seen the passing of our Holy Father, Pope John Paul II. The faithful still keep vigil over his body, pilgrim's praying at his tomb. The Lord said, "I am with you always even to the end of the world" (Mt 28:20). He has returned our Pope to us, miraculously, in the fashion of Jesus. He has been resurrected, in a most humble form. For breakfast this morning, I had two Kellogg's Pop Tarts, French Toast flavored. I had set the toaster to low. When I pulled the Pop Tarts from the toaster, I was astonished to see that one Pop Tart bore the image of His Holiness! Not only is the picture of the Lord's representative on Earth but it is an image of the Pope looking youthful and more refreshed. The other Tart was secular. I wept when I saw this image. The morning sun shone through my kitchen window, illuminating this holy image. It was an ethereal, religious moment for me and is proof that there is an afterlife. Through transubstantiation, we receive Christ, and now, through this breakfast bread, we receive His Holiness. And now I want to share my blessed breakfast with the world!
>
> Because I have been blessed to have owned and toasted the papal tart, I now feel that I can pass it on. I am not out to make money, merely to share this wondrous object. So, I am starting the bidding at the low, low price of $1!
>
> To His Holiness, Requiescat In Pace. To you, peace be with you and happy shopping!

The Pope tart, the author's pre-emptive strike against paredolia.

I e-mailed the seller of the Holy Cheeto, complimenting his "relic" and giving a plug to my own auction.

> What a remarkable item! I hope it goes to a deserving home. I too, have been blessed with a visitation from our Lord. See: http://cgi.ebay.com/ws/eBayISAPI.dll?ViewItem&item=6171209997

The seller responded with the following sage advice.

> What a great auction. I think you should write a press release for it. That's what I did with my auction. Best of luck to you.

Of course, there was no religious awe here; it was for money, not love. In the end, the Holy Cheeto was sold for $102.59 and that much was too much. But how would people react to the even more obviously contrived Pope Tart?

Within hours of listing this "modern relic," the emails started flooding in. The responses ranged from amused viewers who knew the item was a prank, to offended believers who saw me as "cashing in on God," to frustrated viewers who couldn't "see" the likeness and were oblivious to the humor. In what I call "Magic Eye" syndrome, guided by auto-suggestion, some appeared to "see" an image in the pastry, because they

thought everyone else could!

EBay allows for question and answer interaction between the seller and potential buyers. I received a flurry of questions from amused observers. Here are some of the exchanges:

Q: What flavor is the Pope Tart? I'm hungry!
A: It is French Toast flavored. However, If you are hungry, I would counsel you purchase something less expensive and less Holy to masticate.

Q: Why must we not eat the Pope tart?
A: Well, it is a Holy Relic. Would you eat one of Jesus' finger bones or a splinter of the Holy Cross? Some would call this sacrilege. However, purchase it and you can bloody well do what you like with it! Toast it, nibble it, invert it, sacrifice it, desecrate it . . . at your will.

Q: Greetings! I think that if you look very closely, you will see that this actually looks like Pope John Paul the FIRST the predecessor of JP II. The large Roman like nose, and outline of eyeglasses. Would you not agree that this is a sign from above for the cardinal electors?
A: I strongly disagree with your assessment. How can you not see the clear resemblance to PJP II? The strong jawline, the thin lips, the high cheek bones, the dimple and well placed ears! There aren't any spectacles...that is part of his liturgical vestements! I believe the Pope's return is a strong ecumenical message for religious unity and world peace. Perhaps the French Toast flavor is a sign we are in for a Francophone Pope.

Q: I was a fallen Catholic but seeing this I have refound my way. As soon as I saw this food I prayed and the LORD told me to give exactly $3.27. It's good to know I'm not the only lost soul crying out from the dark of a damned world.
A: Peace, Brother. Your story touched me deeply, as I was once a lapsed Catholic. Recent events have brought us all back to His fold. Now, I truly feel a divine presence watching over me, even at breakfast. Thanks for bidding!

However, not all observers were in on the joke.

Q: I think you're disguting [*sic*] to be selling something such as this. Personally, I think you're on something.
A: Sadly, not on anything. Wish I was though. . . . Why does this auction attract all of the fundamentalists?!?

Q: you quoted—"I am not out to make money, merely to share this wondrous object." If this were so [true] then why merely share this type of idolatry at ebay? . . . of all places really . . . ebay! this is so sad and I hope one day you fully understand that by making money off of what you say is from God . . . is wrong . . . remember when Jesus knocked the money off a table claiming to be from God and his house [Church] . . . maybe next week you'll have sugar pope cereal . . . the way for kids to stomach more sugar coated lies.
A: Bloody Protestants! Anyway, look at the trouble Jesus landed himself in, when he behaved in that willful manner! 'Sugar pope cereal'? You have a devious, sacrilegious mind! As for idolatry, G.K. Chesterton said; "Idolatry is committed, not merely by setting up false gods, but also by setting up false devils."

Q: His Holiness chose to visit in his image and your [*sic*] selling out this miracle.
A: You'd think he'd do a better job too. It doesn't even look like him.

The Vatican is reluctant to validate relics, and who can blame them when there are often multiple claimants? There are at least three Holy Prepuces in existence . . . yes, the foreskin of Jesus.

The following appeared on a blog; an amazing unity of gullibility and fad dieting.

The seller, obviously a scam artist, quotes the bible in order to convince the naïve ebay browser he believes this is god's way of reaching out to a faithless world. Right. As if something so full of carbs could ever be holy.

Why, even Father Allen got the joke!

I was relieved after I saw the auction. I read the title and thought it'd be a Catholic personals ad!

Over the course of the auction, I posted a new update every day.

NOT INTENDED FOR CONSUMPTION

Important Update! Many have sent queries asking if the Immaculate Tart foretells the 265th Pope. The Archbishop of Florence states: "The new pope has already been chosen by the Lord, we must only pray to know who it is."

If you want my tip, given the French Toast flavor of the relic, I would venture that the Pope elect may be a Francophone.

More Pontiff Presaging. . . . I postulated yesterday that the Immaculate Tart may portend the pontiff-to-be. The Holy Tart of Berkeley is French Toast flavored and thusly, I deduced that the new Pope may be a Francophone. It now appears that Cardinal Jean-Marie Lustinger, former Archbishop of Paris, is the prelate tipped to take the title, according to spokespeople and bookies. Tres bien! The smoke is still black. . . . Stay tuned.

Okay. So I was wrong. It should have been the Holy Strudel. I've never claimed to be psychic (at least, not in this article!).

By this time, the auction had only days before it would end.

Armageddon!
We near the auction endtimes . . .
Bid today!

I enjoyed blending religion and commercialism. Then, in a surprising and hilarious turn, I received the following email.

> The Library of Congress would like to archive this auction record as part of the Library's research collections documenting the Pope and information about him on the Web.

Displaying no critical thinking, the Library of Congress legitimized my prank! Of course I said yes, completed the online consent form, and promptly posted a final note to the auction Web site.

> Congress Approves Tart
>
> I have been formally approached by the United States Library of Congress whom wish to archive information about my tart for their research collection, to document the life of Pope John Paul II. This Library "preserves the Nation's cultural artifacts and provides enduring access to them." I am proud to relay that I have agreed to this honor. The tart shall live on, contributing to the education and scholarship of this nation!
>
> Get your piece of tart history today! Bid now!

In a country that adores its pop culture, The Pope Tart became instant folklore. The "relic"' quickly became the gossip of message boards, blogs and mailing lists. I was called a "scam artist," "a liar," "evil," "insane," "crazy," "loony," "funny," "a genius," and "sacrilegious." The Tart even became immortalized in the poem, *The Ballad of the Cafe Cheezus* by Angus O'Mann, "Fast Food Poet."

> They traveled there from many lands, some distant and some odd,
> To see the Holy Mackerel and the Glory Be to Cod.
> To see the famous Pope Tart and the Passionfruit of Christ.
> The armored car came once a day, then started coming twice.[7]

I did two interviews about the "relic" and had to decline two others due to work commitments. One interview was with *qtelevision*, an online "queer" TV station. After overcoming their initial surprise that I was female rather than male (an intriguing assumption that most people made), the interviewer asked me, "are you a Catholic?" I broke the ice with the unexpected reply, "No, I'm an atheist." I went on to explain the concept of pareidolia, urging viewers to think about the natural causes of these phenomena.

In the end, the Pope Tart sold for $46. This was measly in comparison to the six-figured sum of the Virgin Sandwich, but extravagant compared to a $4 pack of Pop Tarts. Not bad, considering it was an absolutely unconvincing piece of pareidolia and a blatant hoax! Furthermore, I didn't engage in fervent promotion of the Pope Tart, unlike the press releases of the Holy Cheeto or the worldwide publicity of the Virgin Sandwich. I simply emailed the listing to my usual address book and, in the contagious nature of the Internet, the word spread. Before eBay removed the listing, a routine act after ninety days of the auction close, the Web site had received just over 20,000 hits. Amusingly, Internet folklore believes the Pope Tart was purchased by GoldenPalace.com.

In the end, the joke was on me. The winning bid, like the auction, was a hoax. This suited my ethical purposes well. And so, I contacted Russell Rush, radio DJ for KXXM, San Antonio. Russell was the second highest bidder for the Tart. I offered to donate the Tart to the radio station as a "testimony to human gullibility." He accepted.

Did the Pope Tart succeed in making people more skeptical? Not really. The prank suggested that people can be skeptical of how convincing pareidolia can be but not skeptical of pareidolia itself. In fact, the divine pastry initiated more of its kind, including the "Jesus Ascension Chip," "Jesus's face on a rock" and the "Face of God photocopy." The quality was of the following convincing nature:

> Jesus Rock for sale. Do I have good story about it? Not really. I found it in my driveway. Picked it up, and noticed that it looked like Jesus (the dark color). Also, if you turn it upside down, it looks like Elvis with a big nose (the light color). All I can tell you is that when I hold the rock, it makes me sneeze. Kind of weird, I know.

Then it dawned on me: I didn't have to do a thing. Auto-suggestion is part of the "miracle" of pareidolia, and people would convince themselves! Confirmation bias would do the rest.

The Virgin Mary Cheese Sandwich re-popularized pareidolia, a common, psychological phenomenon. It's natural for us to search for and recognize pareidolia. It is also natural to exhibit an example to others, seeking to confirm our perception. This also explains why people claim to see something even when they don't. What is unnatural is when we see beyond the likeness and assign significance to it. So, the next time you see Jesus in your meat pie, masticate it, don't venerate it!

Notes

1. *The Black Adder*, Episode Three, The Archbishop. With thanks to Sup's Blackadder page for the transcription: www.geocities.com/TelevisionCity/8889/bladder.htm.

2. According to the essay *De Praeputio Domini Nostri Jesu Christi Diatriba* http://en.wikipedia.org/wiki/Leo_Allatius. (David Farley has embarked on a quest for the disappearing foreskin: www.dfarley.com/books.html.)

3. Thomas Serafin (www.ichrusa.com/).

4 Sagan, Carl. *The Demon-Haunted World—Science as a Candle in the Dark*. New York: Random House, 1995, p.45.

5. Bob Carroll, *The Skeptic's Dictionary*. (http://skepdic.com/pareidol.html).

6. Joe Nickell, Rorschach Icons, SKEPTICAL INQUIRER 28(6): (November/December 2004) 15–17. Available at www.csicop.org/si/2004-11/i-files.html.

7. From the upcoming book *For Whom the Taco Bell Tolls* by Angus O'Mann. http://angusomann.blogspot.com/.

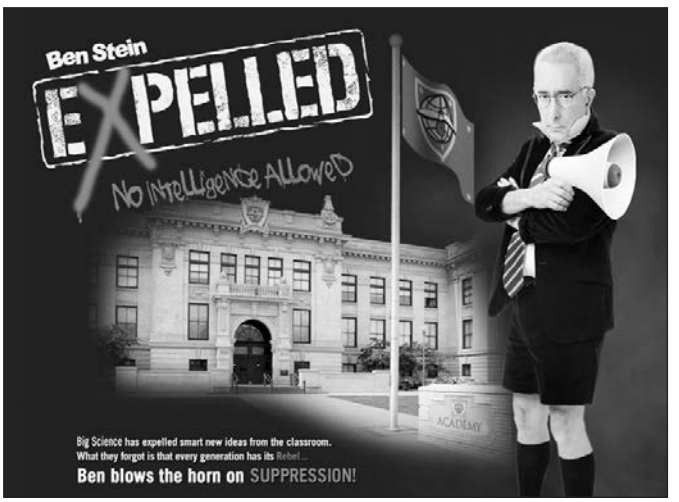
Expelling All Reason

DAN WHIPPLE

Expelled: No Intelligence Allowed. Directed by Nathan Frankowski. Starring Ben Stein. Distributed by Premise Media Corporation. 2008. 105 minutes.

"Ben Stein's upcoming film, *EXPELLED: No Intelligence Allowed* . . . is powerful . . . shocking . . . intense . . . humorous at times."
—Jack Brown
CEO, Capitol Prayer

"This is an enormously important project and I am so proud of the fact that Ben Stein, who is a national treasure, is part of it."
—Michael Medved
Nationally syndicated radio host


Ben Stein
EXPELLED
No Intelligence Allowed
Big Science has expelled smart new ideas from the classroom.
What they forgot is that every generation has its Rebel...
Ben blows the horn on SUPPRESSION!

Powerful? Humorous? National treasure?

These people need to get out more.

I was invited, probably by accident, to a preview in January of the independent movie *Expelled: No Intelligence Allowed*, starring lawyer-economist-actor Ben Stein. *Expelled*, to be released in April, is the latest effort by the religious Right to put the alleged debate between evolutionary theory and intelligent design back on the political front burner after its devastating defeat in court in Dover, Pennsylvania, in 2005.

Expelled is such a morass of innuendo, untruth, irrationality, and fear-mongering that it's hard to know where to start dissecting it. While presenting a brief for teaching intelligent design (in university classrooms, at least), the film never says what intelligent design is. Then, at a media telephonic extravaganza on January 22, Stein and co-producer Walter Ruloff said they had no theology to promote.

Said Ruloff, "We really are not validating one particular position, being the intelligent design or the design hypothesis, or creationism or other forms. What we're really asking for is freedom of speech."

But the movie, or even a cursory review of the film's Web sites (www.getexpelled.com and www.expelledthemovie.com), shows that this assertion is—how to put this politely?—unsupported. Says the GetExpelled.com site, "For decades now, Neo-Darwinism has maintained a stranglehold within public education, suppressing all other theories on the origins of life—especially those that hint of a 'designer.'"

Some of *Expelled* deals with the alleged academic suppression of non-Darwinian ideas. The poster child for this is Richard Sternberg, whose tumultuous, pro-ID controversies at the Smithsonian Institution are chronicled in detail. There is some dramatic, if unfocused, footage of Ben Stein being denied admission to the upper floors of the Smithsonian by a security guard.

Repression of scientific thought, we can all agree, is horrible if true. But it isn't true.

This is a dispute among academics. A lot of cyber-ink was spilled over the Sternberg tussle long before Ben Stein got around to it. You can read Sternberg's version of his persecution (www.rsternberg.net) and a non-ID rebuttal by Ed Brayton (at www.scienceblogs.com/dispatches/2006/12/creating_a_martyr_the_sternber.php) online. The dispute has even made Wikipedia (http://en.wikipedia.org/wiki/Richard_Sternberg), a high-water mark for the bureaucratic pissing match.

But however you measure the fight, the allegations made in *Expelled* are wrong. Sternberg never worked for the Smithsonian, so the Smithsonian couldn't threaten his job there. He was a visiting scholar with research privileges and an office. He still has both the office and the research privileges.

Which is not to say that Sternberg wasn't criticized. He was. Harshly, rudely, and sometimes childishly by other scientists. But rough-and-tumble argument is part of the world of science whether you're studying intelligent design, string theory, or antelope migrations. Freedom

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of expression protects your right to say what you want, but it doesn't protect you from getting punched in the jaw over it.

There are three or four other cases explored in *Expelled*, all of which are presented in black-and-white terms as anti-ID intellectual repression by a Darwinist cabal. There isn't space enough to go into them here. I'll leave it as an independent exercise for the morbidly curious.

After a half hour or so of this, *Expelled* director Frankowski wanders off to blame evolutionary theory for Communism, the Berlin Wall, Fascism, the Holocaust, atheism, and Planned Parenthood. The portions blaming Darwin for the Holocaust are particularly despicable. There's no denying that "social Darwinism" was an abused rationale for racism and cruelty. But genocide and racism were practiced long before the Nazis discovered them and long before Darwin. It can as easily be laid at the door of Christianity, Genghis Khan, the expansion of agriculture from the Fertile Crescent, the Crusades, or a thousand other causes.

ID isn't explained very well in *Expelled* and neither is Darwinism. This quote from Ben Stein comes from the movie's telephonic promotional extravaganza. It's not in the film itself, but the theme is pervasive in the film:

"Darwinism as I understand it—and maybe I don't understand it," Stein said, "but Darwinism holds that life began by something like lightning striking a puddle and inorganic matter was converted into living matter. And from that, after four-and-half-billion years, came the form of life that we now know."

This is wrong as far as it goes. Stein and Frankowski don't understand evolution any better than they understand academic infighting and freedom of expression. Somebody always disagrees with me about this, but Darwinism as *I* understand it has nothing whatsoever to say about the origin of life. I have leafed *The Origin of Species* page by page in vain for Darwin's viewpoint on this topic. Evolutionary forces act when there is already a replicating organism on which they can perform their tiny miracles.

Not that the origin of life isn't an interesting question. It is. But it's outside the realm of usual evolutionary inquiry. Frankowski spends quite a bit of time on the issue of how a cell could get constructed by random mutation, providing a cartoon of 250 random hits on a slot machine to illustrate his point. Apart from the technical details lacking in his depiction, while he might have trouble with the growth of single-celled organisms, Frankowski doesn't blanch at accepting that an entire universe simply sprang up fully mature. Oh, right, the Designer.

I attended a screening of this film at a room in the Catholic Archdiocese of Denver with about twenty-five other people. Frankowski and Stein ridicule the hypothesis proposed some years ago called "directed panspermia." This conjecture—for which, I hasten to add, there is zero evidence—is that life originated elsewhere in the galaxy then was planted on earth, perhaps delivered by alien visitors. Frankowski, and the audience I saw *Expelled* with, found this idea laugh-out-loud funny. But think about it. This is exactly ID's hypothesis: some super intelligent being planted life on earth. IDers prefer that the "intelligence" be the God of Abraham, but there's nothing in the hypothesis to rule out visitors from another galaxy.

While Frankowski preaches about evidence of design in *Expelled*, he presents none. Nor does he present any evidence of holes in evolutionary theory, though he claims that scientists fearful of exposure have found many of them. He never identifies these cowardly scientists, but the depiction of their trembling fear of the Darwinian establishment runs strongly counter to my everyday experience of researchers who couldn't be happier to talk about their maverick ideas. The scientists I know *live* for original ideas, albeit ones they can support with evidence.

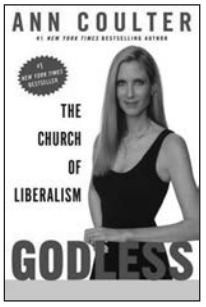
The film, more than any other creationist/ID effort I've seen, is antiscientific and antirational. In it, Frankowski opposes not just evolutionary theory but the scientific superstructure built in the West since Renè Descartes. Using Darwinian evolution as a springboard, he attacks nearly every scientific discipline and the scientific method as leading inevitably to atheism and global Evil.

If there is a theme running through the intellectual swamp of *Expelled*, it's that academia should allow and encourage the airing of counter-Darwinian hypotheses, especially those that posit an intelligent designer. This ignores the thousands of years and hundreds of philosophers, theologians, and many early naturalists—some of them nearly as smart as Ben Stein—who have tried to prove the existence of God through the exercise of reason, such as Thomas Aquinas, for instance. Academia has been embroiled in the religion-evolution debate since the day Darwin published *Origin*.

So, is anyone going to be persuaded by *Expelled: No Intelligence Allowed*? It seems unlikely to convert anyone who isn't already convinced. For one thing, as entertainment, *Expelled* is dull and depressing. Some people don't need evidence to find their truths; some do. *Expelled* presents no evidence, it simply makes vague emotional attacks against Darwinism. People who go for that sort of thing already know everything they need to.

At the end of the media teleconference about *Expelled*, Ben Stein said he planned to soldier on in the anti-Darwinian crusade, because "we're missing something extremely basic in our understanding of the world, and how it got created and I'd like us to return to that."

People who seek this kind of peace used to go into monasteries. Now in the aughts, they make movies. Fortunately, they don't make too many as bad as *Expelled*.



Ann Coulter Takes on Darwin

MARTIN GARDNER

Godless: The Church of Liberalism. By Ann Coulter. Three Rivers Press, 2007. 336 pp. Paperback, $14.95.

Ann Coulter is an attractive writer with green eyes and lopsided, long, blonde hair, whose trademark is insulting liberals with remarks so outrageous that they make Rush Limbaugh sound like a Sunday school teacher. This is one reason why all six of her books have made *The New York Times* best seller list and earned her fame and fortune.

Coulter's fifth book, *Godless: The Church of Liberalism*, has just been issued in paperback to provide an excuse for this review. Here are some of the book's mean, below-the-belt punches:

Monica Lewinski is a "fat Jewish girl" (Coulter 4).

Julia Roberts and George Clooney are "airheads" (8).

Ted Kennedy is "Senator Drunkennedy" (90).

The four Jersey "weeping widows" (289) of men who died in the September 11 attacks are "rabid" (103), "self-obsessed" (103), and "harpies" (112). "I've never seen people enjoying their husbands' deaths so much" (103).

Diplomat Joseph Wilson, whose wife was outed from the CIA, is a "nut and liar" (119) and a "pompous jerk" (121). He is likened to a "crazy aunt up in the attic" (295).

Cindy Sheehan, the vocal war widow, is a "poor imbecile" (102) with an "itsy-bitsy, squeeky voice" (103).

Katie Couric is a "shopworn sweetheart" (295).

Liberals are repeatedly called pathetic nuts and crackpots. "[They] are more upset when a tree is chopped down than when a child is aborted" (5). Apparently Coulter expects God to send most liberals to hell, because she writes, "I would be crestfallen to discover any liberals in heaven" (22).

Coulter has nothing good to say about any Democrat. They are all crazy liberals who are socialists in disguise. Her latest book is titled *If Democrats Had Any Brains They'd Be Republicans.* Here are a few other folks who get pummeled in *Godless*:

All defenders of abortions.

All defenders of gay marriages and those who think homosexuality is genetic.

"Hysterical" and "ugly" feminists.

Scientists who deny there could be subtle differences between the mental abilities of men and women and between different races.

College professors who teach students to hate God and America.

Opponents of capital punishment.

Scientists who fear global warming.

Scientists who once were afraid that AIDS would spread to heterosexuals.

Educators who want to teach small children how to use condoms and engage in oral and anal sex.

Opponents of nuclear power.

The staff of *The New York Times.*

Those who favor embryonic stem-cell research.

Senator John Edwards. Coulter has never apologized for her slander against him. Speaking at a political action conference she implied (falsely, of course) that Edwards is a "faggot." (See Wikipedia's article on Coulter for the shameful details.)

And so on.

In the last four chapters of *Godless*, Coulter suddenly morphs into a science writer. The chapters are blistering attacks on Darwinian evolution—the notion that life evolved gradually from simple, one-celled forms to humans by a process that consisted of random mutations combined with the survival of the fittest. Darwin of course knew nothing about mutations, but Coulter is concerned with modern Darwinism, which she is convinced requires some sort of superior intelligence to guide evolution.

In brief, Coulter is a dedicated believer in intelligent design, or ID for short. Among promoters of ID, mathematician and Baptist William Dembski and Catholic Michael Behe are Coulter's main heroes. Dembski, who has a degree in divinity from The Princeton Theological Seminary, was Coulter's principal adviser on the last four chapters.

Like all IDers, nowhere does Coulter hint at how God, or a pantheistic sort of intelligence, guided evolution. There are two leading possibilities:

1. God manipulated mutations so that new species arose, culminating finally in humans.

2. God may have allowed mutations and survival of the fittest to produce different breeds of a species, such as dogs and cats, but new species were created out of whole cloth, just as it says in the Book of Genesis. Like Behe and other IDers, Coulter is silent on how God directed evolution and what sort of evidence would confirm or disconfirm the role of an intelligent designer.

This is not the place to defend in detail what Coulter likes to call the "Darwinocranks." It has been admirably done in scores of books by top scientists, all of whom Coulter considers cranks. Peter Olofson, writing tongue in cheek on "The Coulter Hoax," in the SKEPTICAL INQUIRER (March/April 2007), accuses Coulter of perpetrating a brilliant satire on ID rhetoric.

Let me focus instead on the transition from apelike mammals to humans. Coul-

Martin Gardner's latest book is The Jinn from Hyperspace *(Prometheus, 2007), a collection of essays and reviews. For twenty-five years he wrote the Mathematical Games column in* Scientific American.

ter repeatedly accuses the Darwinocranks of being embarrassed by a lack of fossils that show transitional forms from one species to another. Such paucity is easily explained by the rarity of conditions for fossilization and by the fact that transitional forms can evolve rapidly. (By "rapidly" geologists mean tens of thousands of years.) Moreover, transitional fossils keep piling up as the search for them continues.

Nowhere are transitional forms more abundant than in the fossils of early human skeletons and the skeletons of their apelike ancestors. Consider the hundreds of fossils of Neanderthals. H.G. Wells, in a forgotten little book titled *Mr. Belloc Objects*, defends evolution against ignorant attacks by the Catholic writer Hilaire Belloc. In Chapter 4, Wells has this to say about Neanderthals:

> When I heard that Mr. Belloc was going to explain and answer the *Outline of History*, my thought went at once to this creature. What would Mr. Belloc say of it? Would he put it before or after the Fall? Would he correct its anatomy by wonderful new science out of his safe? Would he treat it like a brother and say it held by the most exalted monotheism, or treat it as a monster made to mislead wicked men?
>
> He says nothing! He just walks away whenever it comes near him.
>
> But I am sure it does not leave him. In the night, if not by day, it must be asking him: "Have I a soul to save, Mr. Belloc? Is that Heidelberg jawbone one of us, Mr. Belloc, or not? You've forgotten me, Mr. Belloc. For four-fifths of the Paleolithic age I was 'man.' There was no other. I shamble and I cannot walk erect and look up at heaven as you do, Mr. Belloc, but dare you cast me to the dogs?"
>
> No reply.

Coulter is as silent as Mr. Belloc about Neanderthals and about the even earlier, more apelike skeletons. I doubt if they trouble her sleep; I doubt if anything troubles Coulter's sleep. Does she think there was a slow, incremental transition from apelike creatures to Cro-Magnons and other humans? Or does she believe there was a first pair of humans?

Let's assume there was a first pair. Does Coulter think God created Adam out of the dust of the earth, as Genesis describes, then fabricated Eve from one of Adam's ribs? Or does she accept the fact that the first humans were the outcome of slow, small changes over many centuries? If the transition was sudden, then Adam and Eve were raised and suckled by a mother who was a soulless beast!

This is a bothersome dilemma for all Christians who believe in the crossing of a sharp line from beast to human. It is a dilemma about which I once wrote a short story called "The Horrible Horns." If interested, you can find it in my book *The No-sided Professor and Other Tales of Fantasy, Humor, Mystery, and Philosophy*.

We know from a footnote on page 3 of *Godless* that Coulter considers herself a Christian. But what sort of Christian? The word has become enormously vague. Today one can call oneself a Christian and hold beliefs that range from the fundamentalism of Jerry Falwell and Billy Graham, through the liberal views of mainline Protestant ministers and Catholic liberals such as Hans Kung and Gary Wills, to the atheism of Paul Tillich. Tillich did not believe in a personal God or an afterlife, the two central doctrines of Christ's teachings, yet he is considered by many Protestants to be one of the world's greatest Christian theologians!

Wikipedia's article on Coulter quotes her as saying "Christ died for my sins. . . . Christianity fuels everything I write." This sounds like something an evangelical Protestant would say. On the other hand, in *Godless* Coulter quotes a remark by G.K. Chesterton (10), who is almost never quoted today except by Catholics. Is Coulter a Protestant or Catholic? Or some other kind of Christian?

Although I am not a Catholic, allow me to cite a famous passage from Chesterton's introduction to his book *Heretics*:

> But there are some people, nevertheless—and I am one of them—who think that the most practical and important thing about a man is still his view of the universe. We think that for a landlady considering a lodger, it is important to know his income, but still more important to know his philosophy. We think that for a general about to fight an an enemy, it is important to know the enemy's numbers, but still more important to know the enemy's philosophy. We think the question is not whether the theory of the cosmos affects matters, but whether, in the long run, anything else affects them.

Coulter, you are merciless in bashing liberals and atheists, so *please* let us know what church you attend. It would clear the air and shed light on the background for all your insults, especially your blasts at Darwinians.

Entertainment, Religion, and the Decline of Society

PETER LAMAL

The Age of American Unreason. By Susan Jacoby. Pantheon Books, New York, 2008. ISBN: 978-0-375-42374-1. 356 pp. Hardcover, $26.

Many Americans are aware that the educational attainments and reasoning ability of many of our compatriots are woefully deficient. This state of affairs is both symptomatic of—and the cause of—the dismal situation so well described by Susan Jacoby in her new book, *The Age of Unreason*. But it is not a new phenomenon, as readers of Richard Hofstadter's 1962 *Anti-Intellectualism in American Life* know. But,

says Jacoby, America's anti-intellectual tendencies have been greatly exacerbated by a new anti-rationalism that both feeds on and is fed by a popular culture of video images and continuous noise that precludes serious thought. Because of today's unprecedented technology, today's anti-intellectualism can inflict much greater damage than its historical predecessors.

Rather than engaging in reason and presenting us with persuasive evidence to gain support, politicians usually appeal to our rational and irrational fears and self-righteousness. Does any candidate for elective office have the courage to talk about ignorance as a political issue that affects such critical matters as scientific research and decisions about war and peace? Jacoby points out, for example, that Americans are alone in the developed world in their view that evolution is controversial rather than settled science. This may be due not only to American religious fundamentalism but to the public's ignorance about science in general and evolution in particular. Surveys consistently indicate the failure of our elementary and secondary schools to teach [redacted]

Peter Lamal is emeritus professor of psychology at the University of North Carolina–Charlotte and a fellow of the division of behavior analysis of the American Psychological Association. He can be reached at plamal@carolina.rr.com.

jects. A December 2005–January 2006 survey, for example, found that only 6 percent of high school graduates and 23 percent of those with some college experience could locate Iraq, Saudi Arabia, Iran, and Israel on a map. There is plenty of blame to go around, for example the insistence on local control of pre-college education, which precludes adoption of national education standards. But Jacoby also faults intellectuals for failing to unite and foster education improvement.

Jacoby maintains that the two major spurs to anti-intellectualism during the past forty years have been the mass media and resurgent fundamentalist religion.

Jacoby maintains that the two major spurs to anti-intellectualism during the past forty years have been the mass media and resurgent fundamentalist religion. The media subordinate the spoken and written word to visual images. This is deleterious because it presents information in a highly condensed form and crowds out engagement with the written word. Also, because the mass media must capture a public that has an increasingly short attention span, it purveys the simplistic slogans of "junk thoughts," of which junk science is an example. The distinguishing features of junk thoughts are an inability to distinguish between correlation and causation; the use of scientific-*sounding* language without relevant evidence or logic; innumeracy; and expert-bashing involving dismissal of overwhelming scientific evidence as politically biased.

Jacoby insists we live in a "culture of distraction" where reading continues to be displaced by visual imagery, and television is solely an entertainment medium. But this is an overstatement on Jacoby's part. Such programs as *NOVA*, *Frontline*, and *The NewsHour with Jim Lehrer* are more than entertainment. Undoubtedly, however, they attract far fewer viewers than, say, *American Idol.*

The other major energizer of anti-intellectualism has been the growth of fundamentalist denominations. Many of the educated "elites" do not, says Jacoby, understand the pervasiveness and depth of fundamentalist literal belief in the Bible.

Also, there is now a political alliance between fundamentalist Protestants and traditionalist Catholics based on a shared piety and hatred of secularism and the influence of secular values on our society. Evidence of this alliance is the Protestant Right's overwhelming approval of devout Catholics John Roberts and Samuel Alito as U.S. Supreme Court Chief Justice and Justice of the Court, respectively.

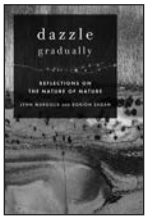
Today's media, with their appeal to emotion rather than reason, are a source of support for the kind of faith that opposes most of the rationalism that began with the Enlightenment. And religion is most powerfully presented visually, unmodified by secular thought, making no appeal to anything but emotion and leaving no room for doubt.

Jacoby also describes other sources of our American social environment of unreason and ignorance, including social pseudoscience such as Social Darwinism and Communism, middlebrow culture, the 1960s and their legacy, and the general dumbing down of public life where politicians and members of the media both create and are the creatures of a public that is distrustful of complexity, nuance, and advanced knowledge.

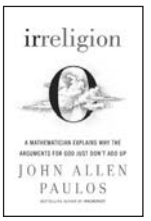
This book is obviously relevant in today's social, political, and cultural environment. It is also wide-ranging; for example, it includes historical-background information relevant to contemporary irrationalism and defective education policies. □

Listing does not preclude future review.

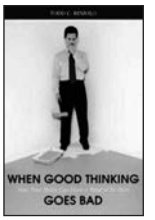
ARCHIMEDES TO HAWKING: Laws of Science and the Great Minds Behind Them. Clifford Pickover. Oxford University Press, New York, 2008. 524 pp. Softcover, $27.95. The polymathic Clifford Pickover discusses "landmark laws of nature that were discovered over several centuries and whose ramifications have profoundly altered our everyday lives and understanding." He sides with Martin Gardner and others who suggest that nature is usually describable in simple formulas and laws—not because we have *invented* mathematics and laws but because nature has some hidden mathematical aspect. After brief discussions of "The Lawgivers, Is It Fair to Name a Law after a Person?"; "Do We Discover or Invent Laws?"; and "What Is Reality Really?" Pickover launches into brief expositions on each of hundreds of such laws and the scientists they are named after. His goal "is to provide a wide audience with a brief guide to important scientific ideas and thinkers, with entries short enough to digest in a few minutes."



DAZZLE GRADUALLY: Reflections on the Nature of Nature. Lynn Margulis and Dorion Sagan. Foreword by Roald Hoffmann. Chelsea Green Publishing, White River Junction, Vermont, 2007. 256 pp. Softcover, $25. A collection of lively, often provocative essays by a distinguished and sometimes iconoclastic biologist (a member of the National Academy of Sciences) and her science-writer son. Some are admirably and even uncomfortably personal. Margulis writes bluntly and honestly about children, mothers, mates, marriage, and the pursuit of science. Sagan, in "The Truth of My Father," bares his emotions about what it was like to grow up as the son of celebrity-scientist Carl Sagan. He admires his late father, divorced from Margulis when Dorion was young, but expresses disappointment and anger at his father's relative inattention ("emotional distance") while basking in the adulation of the wider world. Unlike his father, Dorion seems to distrust a lot about science and skepticism; he refers to the SKEPTICAL INQUIRER's "philosophical naïveté." Other essays by Sagan include topics such as the global sulfur cycle, an evolutionary striptease, and narcissism. Margulis considers such topics as bacterial consciousness, speculation on speculation, and Gaia (with James Lovelock). Jointly, the authors write about the riddle of sex and the coming of transhumans.



IRRELIGION: A Mathematician Explains Why the Arguments for God Just Don't Add Up. John Allen Paulos. Hill and Wang, New York, 2008. 158 pp. Hardcover, $20. Paulos, in this little tome (he calls it more of a handbook or compendium) joins the list of recent literate scientists/scholars who discourse on why arguments for God seem unpersuasive. Unlike some of the others, Paulos writes with a very light touch and with admirable brevity. He is delightfully informal and sometimes humorous. As he says, "Just the gist, with the occasional jest." He defines irreligion (an attribute he has held all his life) as "topics, arguments, and questions that spring from an incredulity not only about religion but also about others' credulity."



WHEN GOOD THINKING GOES BAD: How Your Brain Can Have a Mind of Its Own. Todd C. Riniolo. Prometheus Books, Amherst, New York, 2008. 236 pp. Softcover, $17.95. A psychology professor (Medaille College) who teaches a class on skepticism and the paranormal (and co-author of the recent SI article "The Myth of Consistent Skepticism") presents his take on critical thinking, applied not just to the usual topics but much more widely. A central theme is that we all—skeptics and self-professed critical thinkers too—are inconsistent critical thinkers. Part I provides some hallmarks of critically evaluating claims. Part II discusses the evolution of inconsistent critical thinking. Part III provides examples of inconsistent critical thinking and the influence of our beliefs. His examples include global warming, politics, multicultural claims, and economists and skeptics. He hopes the book will help other critical thinkers to further examine inconsistent critical thinking.

THE PATH OF REASON: A Philosophy of Nonbelief. Bruce A. Smith. Algora Publishing, New York, 2007. 240 pp. Hardcover $34.95, softcover, $22.95. A writer and lifelong student of philosophy provides a personal philosophy of nonbelief. Seven sections include: Faith and Reason Collide, Reason Applied, Critical Thinking, Skeptical Specifics (e.g. coincidences, illusions, and popular myths), Origins, Christianity Examined, and Atheism and Beyond.

—Kendrick Frazier

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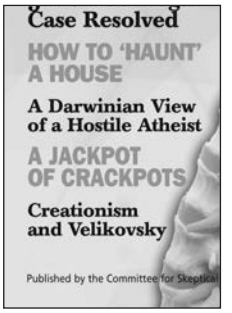
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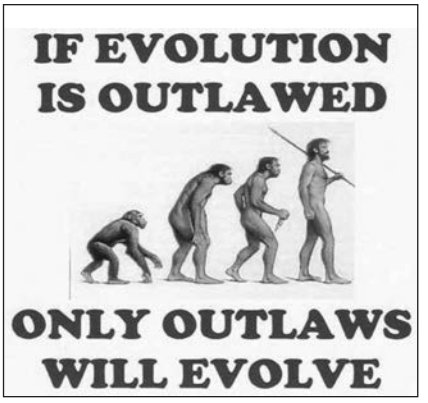
What Would Jesus Deface?

KAT MELTZER



The bumper sticker on my car reads: *If evolution is outlawed, only outlaws will evolve.* Last week, at Safeway supermarket, an anonymous Christian beheld my blasphemy and tried to hack it off. Presumably he tried prayer first. But the Lord refused to smite my beloved cherry-red Mini Cooper. So, the man of Christ decided to witness unto me using the power of, oh, let's say, a boxcutter.

When I returned with my groceries, my first response was to take his Lord's name in vain. Then I realized I might have judged in haste. As a skeptic, I am bound to consider other possibilities.

Alternate Hypothesis No. 1: The guy hates Minis.

Phooey. Minis are adorable. Hating a Mini is like hating a baby, a sweet little baby swaddled in rainbows that you can park anywhere.

Alternate Hypothesis No. 2: A science professor, a lone intellectual fighting the tide of pop culture, sits in his battered Fiat. On the passenger seat, his iPhone displays a wide-eyed kitten in a file drawer. The caption reads "IM IN UR OFFICE DENYING UR TENURE." Slowly, he removes his trusty boxcutter from the glovebox. The handle is cold, the blade keen, and there, a mere three spaces away, is the Miss Congeniality of automobilia, sporting a blatantly flawed proposition about actual science. The professor loses his beautiful mind. Illegitimi non carborundum! This is Sparta!

Actually, it's California, where we are required by law to wear our opinions on our surgically enhanced bosoms. Not surprisingly, bumper banter abounds in every parking lot. Nearly every car in my row has an opinion, including two cars sporting political commentary (*Animals Are People Too!* and *It's Not a Choice, It's a Child!*) So why violate my snarky sticker? Because my hypothetical professor is crazy, not stupid. Skeptics might bore you comatose with reasons and evidence and sarcasm, but they won't firebomb the Semiotics Department.

On the other hand, academicians don't carry boxcutters. Unless MacArthur grants come from Costco now.

And on the other hand, the original hand, the faithful have a long history of sharing the Lord's unconditional love of the blade. Seems counterintuitive, but what do I know? Somewhere in the multiverse, an alien Jenna Jameson probably invited a fraternity of morons up to her penthouse because she was so enchanted by their incoherent yelling and the barf-drool on their tee shirts. It must have worked at least once. Otherwise, why would they do it?

Yup, this is the work of a drive-by Christian, a case of hit-and-run agape. I should probably be grateful that Mr. Agape chose to share the Good News with petty vandalism.

Nevertheless, I wish he had stayed to chat. And not just so I could say "Dude, WTF?" or "You see how much nicer it is when you use your words?" I wanted to do all that hokey stuff like discuss our differences and seek out common ground. For example: we both like books, right? Well, I like books plural and Mr. Agape likes at least one. And I've read That One all the way through. (It's okay. A bit uneven, but that's anthologies.) I suppose he was in a hurry. *My Other Car Is A Broom, Shit Happens, My Honor Student Can Beat Up Your Honor Student*—so many bumper stickers, so little time. . . .

Oh dear. Because if he was in a hurry . . .

Do you remember the Sermon on the Mount? I hope Mr. Agape doesn't. (Not the Beatitudes. Meekness is easily treated with SSRIs, and lo, if he hungered, the Safeway was right there.) Specifically, I hope he doesn't remember this: *If thine eye offend thee, pluck it out, and cast it from thee.*

Because, take it from me, those things are slippery. And they roll. If Mr. Agape believes his Book literally, he really should not be driving. And he definitely shouldn't be swinging a boxcutter.

Poor guy. If I knew which emergency room he'd gone to, I'd send him flowers. Maybe a nice, uplifting book-on-tape, like *Miss Manners Rescues Civilization.*

But I don't know where he is. All I can do is talk to him, even though he isn't here, and hope that somehow he will hear my message. All I can do is pray.

Dear Mr. Agape:

If this life truly is a faith-based reality show, you win. I lose. Me: no whining, no do-overs. You: eternal end-zone dance. In the meantime, how about this: you and your personal savior leave my #@*% car alone, and I won't ask you to evolve.

Amen and get well soon,

Kat.

Kat Meltzer hopes she is a better writer than the last time she appeared in these pages.

Coffee—with Strings

WILLIAM OREM

I ran into a former coworker in the streets of Boston recently and stole a minute with her in the ubiquitous coffee klatch. A few years earlier, we were editors for a major publishing house, working on grade-school science textbooks together. In the interim, I had left the book production business, gone to work briefly as a science editor for a local newspaper, and then left that as well to pursue freelancing. While stirring granulated sugar into her already sweetened tea, she asked me what I was working on now.

I said I had just had the pleasure of interviewing Leonard Susskind, the theoretical physicist at Stanford University and one of the joint founders of string theory. String theory is an elaborate mathematical proposal, a vast, numerical just-so story that purports, among other things, to show how general relativity could be combined with quantum mechanics. The problem of how to do that has dogged fundamental physics since Einstein's day.

"Oh, I know about string theory," my friend interrupted me. "I studied touch therapy." In my reverie, I was caught short by this nonsequitur. Did she say touch therapy?

"I learned it with a specialist in town," she went on happily. "Superstrings were a big part of his technique."

I remember feeling my lips open partway and close again, a gesture I could see reflected in the coffee shop window. Was this the kind of "therapy," I asked carefully, where the practitioner waves his hands over someone's body but doesn't actually touch them?

"Oh, you can *touch* them," my friend retorted, a little bemused, "but it's not strictly *necessary*."

The wisdom of this method—which she spent an entire year paying a "professional" to impart to her—was originally based in Kabbalah. Not *gematria*, she made it clear; many people confused the two. Touch therapy made excellent use of "energy," "fields," and "quantum resonance." It also, somehow, involved superstrings.

I admit to a social impotence in situations like this, of which I am ashamed. It amounts to an unwillingness to throw water on a conversation when I'm with people I enjoy, good people with right intentions, at the moment they begin promulgating astrology or psychic insight or divination. I also recognize this hesitancy as a moral failing on my part. There is no question that the uncriticized belief that Kabbalah and string theory have anything in common is every bit as damaging as the racist, sexist, or homophobic joke we let pass in conversation.

But in that cool, coffee-scented shop, an uncomfortable silence was all I could manage. I believe I made some indistinct gestures, and the conversation moved on. As Carl Sagan said, the candle flame gutters. The demons begin to stir.

I have spent a fair amount of time thinking about this interaction and what it implies for our current situation. Part of the problem, it seems to me, lies in background assumptions. In casual conversation, my default assumption is that people occupy the same reality-testing space as I do, that we are addressing the world from roughly equivalent perspectives. That assumption would *not* imply anything about understanding high-level physics but *would* entail understanding the difference between physics and psychics. It would *not* entail understanding observer-dependent relations in quantum mechanics but *would* entail recognition that there is an objective reality unaffected by our thoughts. It would *not* entail knowing contemporary neuroscience but *would* entail recognizing that minds don't leave bodies, that dreams are not physical journeys, and thus, that Catherine of Sienna (to pick one of my favorite mystics) didn't really travel to heaven, hell, and purgatory any more than Mohammad took a mystical nighttime journey to Jerusalem before he ascended into heaven.

My assumption, it turns out, is incorrect. And even more disturbing, it is incorrect even among the highest tiers of education.

At a university in Ohio, I spoke one night with a tenure-track professor of molecular biology who was also a member of the Ramtha cult and thus believed J.Z. Knight channels a 35,000-year-old spirit warrior who fought in Atlantis. Another academic, a practicing male witch, refused to judge this belief either plausible or implausible on grounds that "we don't know everything." The biologist's boyfriend, I learned, had psychic powers that allowed him to channel their cat remotely in order to determine his wishes when they were picking out pet food (I am not making this up).

Such gullibility goes beyond an inability to criticize a claim properly. These academics were formally schooled; in the case of the biologist, her background knowledge was far *in excess* of my default assumption. What she, the witch, and

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the cat-chaneller were lacking was clearly not intelligence. Yet at the same time, a vast sinkhole of stupidity had become lodged in their brains. The rational, critical faculty that could analyze DNA transcription or restriction enzymes had somehow become wholly separated from the emotional, uncritical aspect that was saving canned goods against the day when Ramtha will eradicate unbelievers.

Thus, my editor friend's comments struck a deeper chord than they might otherwise have done. As I made my way back into the Boston snow, it occurred to me that having learned the secrets of holistic touch, she would continue editing those same books meant to inoculate the next generation against such irrational thinking. While the science she read all day long found a home in her consciousness, the scientific world-view evidently did not. No part of her thinking was equipped to ask what waving your hands over someone else's body has to do with a mathematical theory of hadrons, how the "therapist" came by the knowledge he claimed to have, or why a supposed connection between string theory and therapeutic touch has never been suggested in credible scientific literature.

Among the various emotions this realization caused was a generalized guilt, a quiet feeling of having abandoned a generation that is looking to us for guidance. These are children, after all, who are growing up among a host of adults who do not want them to be fully rational; who are lobbying to insert their religious views into laws, to elect government officials based on metaphysical affiliation, and to bracket and sticker responsible science textbooks and replace them with creationist bunk.

My more immediate response, however, was anger. Anger not at my friend but at the snake-oil salesman who suckered her into hokum by calling it quantum. Anger at the cult that offered a potentially fine biologist in Ohio a way out of reality that proved too tempting for her emotional vulnerabilities, taking her sharply tuned brain and clotting it with gibberish. Anger at whatever group teaches the next great thinker to distrust his own senses, at whatever clan tells the next great philosopher to discredit her own mind, and at the guru who tells any one of us, in any profession, to forfeit our birthright as rational, clear-headed beings.

There was a moment in my conversation with Dr. Susskind when we considered the possibility, as string theory and inflationary theory both suggest, that we may actually be living in a multiverse—a vast conglomeration of universes in which the entirety of what we see, billions of light-years in any direction, is only a single grain in an infinite shining beach. This is the kind of reality contemporary physics actually hints at. These are the heights, vastly greater than Olympia, that our scientific imagination is capable of scaling. It's a view to make the most jaded mystic tremble. □

FOLLOW-UP

Zombies and Tetrodotoxin

TERENCE HINES

In the July/August 2007 issue of SKEPTICAL INQUIRER, Costas J. Efthimiou and Sohang Gandhi (2007a) argued that Haitian voodoo witch doctors create real zombies by using preparations containing the poison tetrodotoxin (TTX). I will address several problems with the Efthimiou and Gandhi paper and then discuss the wider issue of whether TTX is a valid explanation for Haitian zombies, an argument first made in 1983 by Wade Davis, an ethnobotonist with a PhD from Harvard.

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Efthimiou and Gandhi describe a zombified patient who had been studied by a Haitian doctor. This patient came to their attention through a 2002 television documentary. The original article contained several errors in the description of the brain scan that was illustrated on page 33. The authors corrected these errors in their reply to letters to the editor regarding the article (Efthimiou and Gandhi 2007b). There are, however, a few more problems in the original paper that need clarification. On page 33, the authors claim that patients suffering from TTX poisoning are sometimes certified as dead but wake up just before burial. This is surely an extraordinary claim, but the authors do

not provide a single reference to any such case.

Also on page 33, they state that the body of someone suffering from TTX poisoning will "show signs of rigor mortis and even produce the odor of rot." Here they confuse paralysis with rigor. As will be described in detail later, the effect of TTX is to block nerve impulses. These impulses are necessary to enable muscles to contract. In the absence of these impulses, patients are unable to move their muscles. But their muscles are *not* rigid; they are instead limp or flaccid. There are conditions that result in rigid muscles, but these are caused by too many, rather than too few, nerve impulses.

The claim that TTX produces the "odor of rot" is one I have not come across before. It might be the result of the anal sphincter losing tone and thus causing the patient to defecate involuntarily. However, I have enough experience in the autopsy room to know the difference between the smell of feces and a decomposing corpse. Presumably, Efthimiou and Gandhi have not had these happy experiences.

Efthimiou and Gandhi argue, as did Davis earlier (Davis 1985), that zombification could "easily be caused deliberately by the voodoo sorcerer, say, who could slip the dose into someone's food or drink." This claim is implausible. The amount of TTX in puffer fish flesh varies as a function of fish sex, species, and time of year, as well as the anatomical location of the flesh (Kaku and Meier 1995). Further, the effect of any drug on an individual varies as a function of the individual's age, sex, state of health, body weight, experience with related drugs, and numerous other variables. Even experienced physicians find it difficult to prescribe the correct dosage of drugs to patients who vary on these characteristics as all human beings do. And these are drugs produced to exacting specifications so the physician knows the exact dose the patient will receive. This is a bit different from a bunch of ground up, dead fish and who knows what else produced on the spur of the moment by the local witch doctor. Witch doctors simply could not produce such fine-tuned effects with such poor quality material to work with, even if at some hypothetical "right dose" TTX had such effects. The basic problem is that at *any* dose, TTX would not have any such effects.

Wade Davis and the Zombies of Haiti

Davis' claim that TTX in zombie powder is the root cause of zombification first came to the attention of the general public when his book *The Serpent and the Rainbow* was published in 1985, although he published a paper in the scientific literature earlier making this claim (Davis 1983). There are two separate aspects of Davis' claim. First, he claims that the zombie powder he obtained in Haiti contained significant amounts of TTX. Second, he said that these levels of TTX would produce the traditional zombies known to Haitian mythology.

In his 1985 book, Davis described his trips to Haiti, his introduction to Haitian culture, and his attempts to acquire the powder used to produce zombies. The book is an excellent example of a credulous foreigner taken advantage of by local tricksters and is full of scientific absurdities. On page 26, for example, he informs the reader that the "muscles of the iris continue to contract for hours after death." This is simply wrong. On page 50, he describes going to a voodoo ceremony specifically produced for tourists (admission was $10) at which a woman took a glowing hot coal in her mouth without suffering any burns. He marvels that she does this every night without harm. His explanation? She had "clearly entered some kind of spirit realm." Davis obviously never even considered that this perhaps was just a standard sideshow stunt to fool the tourists. No such skeptical thoughts ever seem to have entered Davis' head. One is reminded of Margaret Mead being conned by clever Samoan children during her studies (see "The Fateful Hoaxing of Margaret Mead," SI November/December 1998).

Davis reports that the zombie state can be made to last for long periods of time. Allegedly, one zombie was kept for years so he could work as a slave on a plantation. "Together with many other zombies, he had toiled as a field hand from sunrise to sunset," claimed Davis (1985, 80). The obvious suggestion here is that witch doctors not only make zombies but keep them in the zombie state for years. This would be quite the pharmacological accomplishment, as will be seen below. Davis later seemed to back off this claim, admitting that the case in point was difficult to verify (Booth 1988).

Ultimately, Davis secured samples of zombie powder. Since one of the powder's ingredients is bits of dead human tissue, Davis commissioned a grave robbery to obtain the decomposed flesh of a recently buried child (Davis 1985, 92–95). Pictures of the process, including using a stick to remove bits of decomposed brain, are found in his books (Davis 1988, p. 115–116). As might be expected, Davis was heavily criticized for this ethical breach (Anderson 1988; Booth 1988).

In the end, several samples of zombie powder were analyzed for TTX levels by Kao and Yasumoto (1986). They found only "insignificant traces of tetrodotoxin in the samples of 'zombie potions' which were supplied for analysis by Davis." Furthermore, they stated: "it can be concluded that the widely circulated claim in the lay press to the effect that tetrodotoxin is the causal agent in the initial zombification process is without factual foundation" (p. 748).

This was not the end of the matter, however. Benedek and Rivier (1989) reported that they found significant amounts of TTX in one out of six samples of zombie powder. Kao and Yasumoto (1990) strongly criticized the Benedek and Rivier report on various technical grounds, including the fact that the analysis these authors used was

not specific for TTX.

The refutation of Benedek and Rivier by Kao and Yasumoto is powerful and conclusive but raises another question. If biochemical analyses of the zombie powder supplied by Davis *had* shown the presence of TTX in significant quantities, would this have strengthened Davis' claim of the creation of zombies using such a concoction? To answer this question, we need to closely examine the pharmacological effects of TTX.

The fundamental unit of information processing in the nervous system is the action potential, an electrical signal that travels along nerves. It is produced by flows of ions (charged particles) that cross nerve cell membranes through specific channels, one channel for each species of ion. One of the most important channels is the sodium channel, which allows positively charged sodium ions to pass into the neuron, or nerve cell. In fact, it is the passage of sodium ions into the neuron through sodium channels that allows the action potential to proceed along the neuron. If something blocked these sodium channels, no action potentials would be produced. Dire results, including death, are possible if enough sodium channels are blocked. TTX does exactly that; it selectively blocks sodium channels on the neural membrane. TTX prevents sodium ions from entering the neuron and thus prevents the generation of action potentials. It should be noted that the major effect of TTX is on nerves in the peripheral nervous system that control motor output and relay sensory information to the brain. Little if any TTX actually enters the brain, which is protected by a barrier that prevents certain types of molecules, such as TTX, from crossing the blood stream into the brain.

TTX occurs naturally in a number of animals, the best-known example being several species of puffer fish found in both Asiatic and Caribbean waters. Interestingly, these fish do not themselves produce TTX but obtain it from TTX-producing bacteria (Mebs 2002). Newts and toads in the Pacific Northwest produce TTX, but its biological origin is not clear. TTX is best known as the cause of fugu poisoning. Fugu, raw Japanese puffer fish, is a delicacy in Japan prepared by specially trained chefs who remove the poisonous tissues of the fish while leaving uncontaminated portions for consumption.

TTX poisoning is a real and serious medical problem in areas where puffer fish are considered food. The first mention of puffer-fish poisoning, at least by a Western writer, is found in 1774 in the journal of Captain Cook's second voyage (Isbister et al. 2002). Since the toxin affects motor and sensory nerves, both motor and sensory symptoms are encountered, especially at higher levels of poisoning. The severity of poisoning is classified by four levels, or grades (Isbister 2004). At grade one, there are only mild sensory symptoms, such as numbness around the mouth, but nausea may also be present. At grade two, numbness becomes more widespread and there is some motor difficulty, including slurred speech. At grade three, symptoms become more severe, including a "generalized flaccid paralysis, respiratory failure, aphonia and fixed/dilated pupils; patient remains conscious" (Isbester 2002, 1635). Finally, in the most severe grade-four cases, one finds more serious respiratory problems, hypotension, and cardiac difficulties. The patient may lose consciousness. If enough toxin is ingested, death will occur. If death does not occur, patients generally recover with supportive care within a week.

Note that these symptoms are very different than the usual images of the zombie, either those seen in horror films or put forth by Davis. In both, the frightening zombie, devoid of any but the most minimal level of consciousness, lurches around with stiff arms and legs. But real victims of puffer-fish poisoning aren't going to be doing much moving around at all. They will suffer from *flaccid* paralysis, meaning that there will be little or no muscle tone. There will be breathing problems and, in serious cases, the blood will not carry sufficient oxygen to the brain. They will also feel nauseated. As noted above, Davis argues that zombies can be created for use as laborers on plantations in Haiti. It seems to me that a bunch of nauseated, paralyzed guys would not make very productive field workers!

The total lack of similarity between the real symptoms of TTX poisoning and the mythological zombies of Hollywood should be enough to sink the claim that zombies are caused by TTX poisoning. This fact led the scientific community to dismiss Davis' claims as absurd back in the 1980s. Unfortunately, this debunking never found its way into the mainstream press, as is so often the case.

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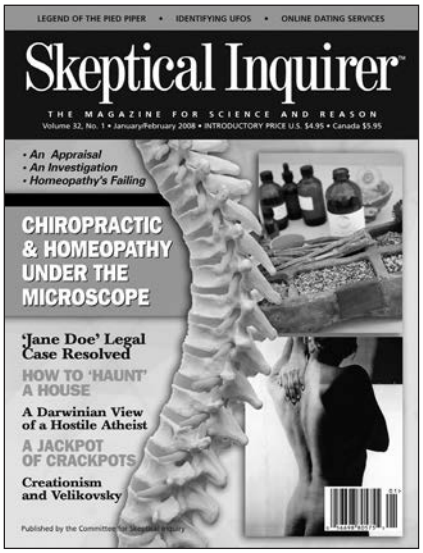
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Chiropractic, Homeopathy . . . and more

In his chapter on medical cults in *Fads and Fallacies in the Name of Science* (1957), Martin Gardner discussed chiropractic, osteopathy, and homeopathy. Your January/February 2008 issue has interesting articles about two of these three but no discussion of osteopathy.

The discussion of the third leg of the tripod is important, since doctors of osteopathy (DOs) are now often the only kind of primary care provider that is accessible. My local medical group, for example, just hired two DOs and gave me no access to their surviving MDs on the retirement of my current MD this month. I have been looking elsewhere on the ground that the pseudoscientific beliefs and training of the DOs make me suspicious of everything else they do.

But I gather that DOs are becoming more mainstream and that they can have good residencies after their osteopathic training. That raises questions as to why they went to osteopathic school instead of medical school in the first place, and what there might be in their training that could lead to nonscientific conclusions as they see patients. Online researching indicates various nonscientific teachings that persist in the osteopathic schools. Under managed care and the pressure of treating patients at a high rate, is it that they act 100 percent like medical doctors (MDs)?

Jay M. Pasachoff
Field Memorial Professor of Astronomy and Director, Hopkins Observatory
Williams College
Williamstown, Massachusetts

Author Samuel Homola, DC, replies:

Professor Pasachoff's letter raises important questions and a valid concern. I am not an osteopath and therefore cannot speak authoritatively on the subject of osteopathy. It is my impression, however, that the educational requirements and the training of medical doctors and osteopaths are the same, except that osteopathic schools may include training in manipulative therapy and body mechanics. Some researchers have reported that grade point averages and Medical College Admission Test scores of osteopathic students may be lower than those of medical students.

Since the definition of osteopathy places emphasis on the structural aspects of healing, I'm sure that some well-qualified students of medicine choose to study osteopathic medicine in order to combine the two methods of treatment, reserving use of manipulation (in combination with medical procedures) for treatment of musculoskeletal problems while depending upon medical procedures in the treatment of nonmusculoskeletal problems. An osteopath who combines appropriate use of manipulation with mainstream medical care can offer a valuable and unique service.

Today, the percentage of practicing osteopaths who use manipulative therapy for any reason is low; most are occupied with the practice of medicine. I have no problem with evidence-based osteopaths who include use of manipulative therapy in their treatment armamentarium. Nor do I have a problem with osteopaths who are devoted entirely to medical and surgical procedures. Both can be dependable specialists and primary care providers. But I do understand the concern of persons who question why a qualified pre-med student who is not interested in osteopathic manipulation would choose to attend an osteopathic college rather than a medical college—except for the difficulty of being admitted to an accredited medical college. And one might also wonder if a surgical residency in an osteopathic hospital is equal to residency in a medical hospital.

Unfortunately, it appears that a few osteopaths still cling to the original osteopathic theory, which embraces the idea that osteopathic manipulation can heal disease by removing interference with nerve and blood supply, particularly in the spine. Some of these practitioners may make questionable claims and use such questionable treatment methods as "cranial osteopathy"—claims and methods rejected by mainstream osteopathic and medical practitioners. Graduates of osteopathic colleges that fail to denounce such methods may be less evidence-based than others.

I wanted to pass on to you an experience I had with a friend who is seeing a chiropractor. She was excited about the "doctor" discovering what allergies she had and wanted me to see the woman. This is how this chiropractor tests for allergies: she has the patient hold a metal rod, and then the chiropractor exposes them to an allergen and waits for, as my friend put it, the "histamine reaction." Using this "test" the chiropractor claimed my friend was allergic to soy products and a number of other things. You can imagine her letdown at my lack of interest in contacting the chiropractor to take advantage of her "therapy."

My friend never misses a chance to talk about the chiropractor. But if she thinks I'm going to see someone and pay $150 for small bottles of water that have "memories" and be diagnosed for allergies with a metal rod, she's got another thing coming. Wouldn't this be classified as practicing medicine without a license? Inquiring people want to know.

Donell Meadows
New Bern, North Carolina

With the availability of scientific literature, I am shocked that so many journalists do not do their research. In response to the statement "there is no scientifically credible evidence that chiropractic treatment can alleviate high blood pressure . . ." ("A Skeptical Consumer's Look at Chiropractic Claims," SI, January/February 2008), I present to you the most current research regarding chiropractic adjustments and hypertension. This study took place at Rush University Hypertension Center and was published in the *Journal of Human Hypertension* in May 2007. The authors concluded "that restoration of Atlas alignment is associated with marked and sustained reductions in blood pressure similar to the use of two-drug combination therapy." This is a pilot study. However, the results were so astounding that another study is currently underway.

I request that a rebuttal be published to correct the misinformation. The profession of chiropractic is struggling to find its identity. However, the professional commitment remains to provide the most effective care and accurate information for individuals. I hope that this commitment to accurate information is shared by the editors of SKEPTICAL INQUIRER.

Julianne Newman
Castro Valley, California

Authors Bruce A. Thyer and Gary Whittenberger respond:

We welcome the comment by Ms. Newman regarding a newly published study evaluating the effects of chiropractic manipulation of the Atlas vertebra on high blood pressure. Since this article

was published in May 2007, after our survey was conducted and accepted for publication, we can hardly accept her judgment that our report was somehow shoddy journalism. We note that the persons with whom we spoke and who claimed that chiropractic could help with high blood pressure would not have known about this study as they tried to recruit patients with presumptive hypertension. This remains an unjustifiable practice.

The study Ms. Newman brought to our attention (Barkis et al. 2007) tested the effects of a precise, delicate, manual alignment of a single vertebra, C-1 or Atlas vertebra, located at the top of the spine. This specialized method is not typical of the full spinal-based manipulations provided by most chiropractors.

A further problem with Bakris et al. is that although they claimed that Atlas realignment reduced blood pressure to an extent similar to using anti-hypertensive drugs, we would like to point out that they did not include a comparison group actually treated with medication, surely an essential control feature in order to legitimately claim that Atlas adjustment works as well as does conventional drug therapy. An even earlier randomized controlled trial compared the anti-hypertensive effects of diet management plus chiropractic adjustments versus diet management alone, and found that adding spinal adjustments had absolutely no effect on blood pressure (Gertz, Grimm, Svendsen, and Grandits, 2002).

One flawed pilot study certainly does not constitute sufficient evidence for an entire profession (chiropractic) to assert that it can legitimately treat patients with high blood pressure using spinal manipulation. To do so borders, in our opinion, on medical malpractice, and we hope that the appropriate regulatory authorities in the individual states act to curb such excessive claims of chiropractors, their assistants, and representatives.

In "The Difference between Hahnemann and Darwin" in your January/February 2008 issue the author makes the statement that when diluting a 1-mole solution by a factor of 1/10 for 24 times, there will be no solutes remaining in the resulting diluted solution.

Matter can neither be created nor destroyed. The $6.022 3 10^{23}$ molecules of the original solute are still present in the resultant 10^{24} doses of the diluted solution. Assuming that the total diluted solution is uniform, the best that can be said is that the probability of finding a single molecule of the original solute in a resultant dose is 0.6022. This is less than 1 but certainly greater than 0.

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'Haunting' a House

"How to 'Haunt' a House" (January/February 2008) was a wonderful bit of detective work, reasoning, and writing. Surely Mr. Radford is correct that Tom's bed was being kicked by Tom, not by an unseen being. Tom may well suffer from "restless legs syndrome" (RLS), but the sensation of the bed being kicked suggests strongly that he also suffers from the less common condition called "periodic limb movement disorder" (PLMD). These two are distinct movement disorders; both may occur simultaneously in the same person.

RLS was described in the sixteenth century but not truly recognized and studied until the 1940s. People with RLS have an irresistible urge to move their legs while at rest. These feelings may be present all day long, making it impossible for an individual to sit still; however, they are most common in bed at night. PLMD, also known as "nocturnal myoclonus," occurs only during sleep. It is marked by involuntary muscle contraction ranging from slight, continuous movement of the feet to the more common sudden and vigorous kicking of both legs. Sometimes the arms jerk as well. It was recognized as a separate disorder from RLS in the 1970s.

In addition, given the medical problems described in the article, Tom, especially if he is actually Hispanic, is at extremely high-risk of developing diabetes, which would make it possible that the "tapping" sensation that Tom feels in his feet results from developing peripheral neuropathy.

Michael Verber, MD
University of Texas Health Science Center
San Antonio, Texas

While reading Benjamin Radford's article on a haunted house, I was reminded of my own "haunting" almost thirty years ago.

In the early 1980s, newly married, I moved with my wife into an older house on Ridge Avenue in Evanston, Illinois. The house was turn-of-the-century, two stories, squat, and solid. There was a wide front porch enclosed with windows, which had the unfortunate effect of placing the living room always in darkness. On the back of the house, off the dining room, was a wide, deep "alcove," really a room itself save that it lacked one wall. Two of the other walls were windowed, and I chose this bright and sunny area as my studio. (I am a comic book writer and illustrator, so already no stranger to ghosts and other odd things!)

The upstairs consisted of three bedrooms and a bathroom, grouped around a short, narrow hall. My wife, then a working actor in the Chicago area, took the smallest of the bedrooms as her home office. This was immediately above my studio.

One day about a week after we moved in, with my wife out on a round of auditions and my stepdaughter in school, I sat working on the latest issue of *Fantastic Four*, then my assignment as writer and artist. I heard the distinct sound of footsteps in the room above me proceeding across the room, down the short hall, down the stairs that led to the front door of the house, and then, disturbingly, doubling back and crossing the living room, the dining room, and finally ending right beside me as I sat at my drawing board. There was nothing there.

The next day, my wife and daughter once again out of the house, these footsteps were repeated, and repeated again on roughly alternate days for several months. I began to refer to it as the house "walking." "The house was walking again," I would say when my wife came home in the evening. I started keeping a log, jotting on the cover of my drawing board the times and days when the walking occurred. There seemed to be no pattern.

Finally, one day in early summer a contractor we had hired to look at the crumbling bricks of one front corner of the porch arrived. He determined that the bricks were crumbling because the house was subsiding, and the weight was settling into that corner. He asked to see the basement. I have no great fondness of basements, and this one was particularly unpleasant to me; it was low-ceilinged and poorly finished with odd-shaped rooms and old furniture that could set off my allergies. The contractor noted that the ancient tree trunks which were pushed up under some of the beams to support the house were in bad shape and much in need of replacement. So out they came, replaced by new, expanding metal supports.

After those went in, the house no longer "walked." It was the subsidence that had been the cause, with the "path" of the "footsteps" more or less transecting the house corner to corner, along the same line on which the subsidence was occurring.

I'll confess—I'd gotten used to the "mysterious stranger" (even though I don't believe in the supernatural in any way) and kind of missed his/her occasional walks through the house.

John Byrne
Comic book writer/illustrator

Benjamin Radford's client Tom—"How to Haunt a House"—experienced a phenomenon

remarkably similar to something that happened to me. Fortunately, I eventually discovered the cause of mine and exorcized my "ghost."

Shortly after moving to this address, I was awakened one night by something shaking my bed. After this happened several times, friends suggested that my new home was haunted.

Radford suggests the lightweight bed of Tom (a big man) was shaken by his vigorous leg jerks during sleep—improbable for me as I have a heavy, double-sized bed and weigh less than 100 pounds.

However, like Tom, I use medical equipment to aid my breathing during sleep.

I acquired my current equipment soon after moving here. It consists of a plastic mask over the nose connected to the bedside machine by approximately two meters of plastic, ribbed hose which rests on top of the bedcovers.

One night I was still awake when the shaking started, and I realized that the hose was slipping off my bed, making the mattress shake as each rib rasped against the bed.

Now I always tuck the hose securely under the top cover so that it does not slip out during the night, and I have never again been visited by my "ghost."

Maz Whiting
Ipswich, Suffolk
U.K.

Darwinian View of Dawkins' Atheism

The intensity of emotional response, apparently a projection of hostility, by so many from the scientific community to Dawkins' *God Delusion* is astounding (as in Irwin Tessman's article "A Darwinian View of a Hostile Atheist," January/February 2008). The level of "hostility" expressed in Dawkins' book appears mild compared to numerous reactions to it. Dawkins may indeed be angry; his "righteous indignation" is not without considerable warrant. But hostile? There is a difference! I don't see hostility in Dawkins; I do see it in Tessman.

Tessman's choice of words and expressions in characterizing Dawkins and his work are largely pejorative and ad hominem, not well reasoned, not descriptive or evidence-based. To wit: Dawkins is "a militant atheist." The word *delusion* in the title "sets a belligerent tone." (How about "Hostile Atheist" in Tessman's title?) Tessman quotes a long list of negative adjectives from page 31 of the book characterizing the God of the Old Testament. He calls this "classic Dawkins." (Note that he does not claim there is no evidence in the biblical record to support these characterizations, not for a single one of them. His intent is to be dismissive, not to show error.) Dawkins "has his crosshairs on the personal God." Tessman, without reason or evidence, discredits polling data on "belief in God" as a "publicity game" and says "Dawkins invents a nearly subliminal version of the game." Dawkins "recklessly implies;" Dawkins is in "a take-no-prisoners mode" It is this language not Dawkins' that smacks of hostility.

As a scientist, I find hostile, emotional responses such as Tessman's to Dawkins and his book frankly an embarrassment. More charitable, thoughtful, and reasoned responses can be found coming from the religious community. As evidence of one, I would like to quote from portions of the Episcopal Bishop John Shelby Spong, responding to a questioner in his "Q & A" email program (November 28, 2007) concerning his view of Dawkins and his book:

> I think Professor Dawkins is both brilliant and an incredible communicator. The definition of God that he rejects is the same one I reject. . . . Traditional Christianity has been buffeted by the insights of Copernicus, Kepler, Galileo, Newton, Darwin, Freud and many others. They have destroyed the credibility of much of our God talk. Richard Dawkins points that out in powerful ways, feeding his conclusion that God is a harmful delusion that ought to be dismissed. I agree that God is in fact a delusion and ought to be dismissed. . . . I am glad his book is so popular. I think it feeds the very debate that the religious tradition of the West needs to have. J. B. Phillips, another Englishman, once wrote a book entitled *Your God Is Too Small.* I believe that is the great problem facing contemporary Christianity. Richard Dawkins helps to make sure we face that problem and, for that reason, I welcome his book.

What an interesting response by a theologian to one who is "completely scornful of theologians" and who has a "defiant dismissal of theology"!

Oren Glick
Social Psychologist
Portland, Oregon

Author Irwin Tessman responds:

Oren Glick seems to me to have read much in my article that I don't recognize.

Upon reading "A Darwinian View of a Hostile Atheist," I became more interested about expressing my view regarding a scientist being either an atheist or a religious person. It seems to me that either represents certainty. In my view, science does not involve certainty. Therefore, a scientist who does not compartmentalize thoughts and beliefs and is a consistent thinker must be an agnostic.

John E. Hendrix, PhD
Emeritus Professor
Colorado State University
Fort Collins, Colorado

As scientists and skeptics we seek to base our beliefs on reason and evidence and pounce upon those, such as creationists, who appear to do the opposite. In your last issue, Irwin Tessman describes Dawkins' vitriolic efforts to do just this.

Toward the end of page 39, Tessman criticizes Dawkins' use of high-profile atheists to boost his case, asserting that "nothing in science gets resolved by authority but rather by the voice of reason." Unfortunately this claim is quite false. For instance, Eddington's "proof" of relativity was patently nothing of the sort (the data were dreadful). Nevertheless, the scientific establishment was happy to accept it because it was "endorsed" by J. J. Thompson and critics were ridiculed by the London *Times*. In a similar manner Pasteur's germ theory quashed Pouchet's spontaneous generation not through logic and reasoned argument, as is commonly thought, but by political leverage at the Paris Academy. Given the state of knowledge at the time, Pouchet had good evidence against Pasteur's germ theory but lacked an unbiased platform to air his views.

Tessman's argument draws on minor details in *The God Delusion* to accuse Dawkins of lacking objectivity. This is hardly necessary since the book oozes bias and vitriol from the title onward. Why then does Tessman devote three paragraphs of petty points to "uncovering" the bias in Dawkins? Could it be that as skeptics we can't bear to acknowledge that science can be overtly unobjective? Yet history shows that even eminent scientists have based their ideas on preconceived notions and could be unforgivably biased in their treatment of competing theories. While attacking proponents of the irrational we must acknowledge the lack of logic also manifest in ourselves.

Rob Campbell
Cold Spring Harbor Lab
Long Island, New York

Irwin Tessman writes: "While in his take-no-prisoners mode, Dawkins asks what it is that religion has taught us. His answer: nothing. In this he goes up against Stephen Jay Gould."

NOMA has taught us that dialogue rather

than dominance is the most productive course to pursue. This piece misreads Gould's NOMA (Non-Overlapping Magisteria) principle and delegitimizes his approach to so-called "war" between science and religion, transforming him into an unwitting compatriot with religionists. This word *war* appears in the subtitle: "a new chapter in the warfare of science with theology," and thereby sets the tone of the essay.

Gould uses "Magisteria" (in his *Rocks of Ages,* 1999) in a way that emphasizes different methods of study rather than methods by which human beings can ultimately answer "objective questions about how the universe works (empirical questions)" and conclusively answer "the ultimate questions: why am I here, what is the purpose of life, what is the basis of morality?" That is, NOMA examines approaches to parallel but nonoverlapping empirical problems on the one hand, and subjective philosophical and ethical problems on the other.

Gould never assumes that empirical questions are within the purview of the theological magisterium. This would break two of NOMA's stipulations, the magisterias': (1) equal status and (2) independence.

Curt Claus
Gordonsville, Virginia

Some Notions Not So Nutty

Although I appreciate Robert Wolke's alert to the many schemes advertised in typical "alternative" publications ("Stalking the Nutty Notions," SI, January/February 2008), he and we should be careful not to brand everything in the list he compiled as fraudulent. I am thinking mainly of therapeutic massage, which I'm sure we can all appreciate as a treatment that relieves sore muscles, which consequently can relieve some other pain, at least temporarily. It can also provide a time to quiet the mind, leaving the patient feeling relaxed and refreshed. Most of these therapists are well-trained in human anatomy and licensed to provide limited services within state and local laws. There are certainly a few other services in Wolke's list—such as yoga, grief counseling, and walking meditation—that provide some benefit and may be worth the price, especially if they are free. I know that CSI researchers and authors have exposed the deceitful claims of some of the others, but let's not use a broad brush to criticize all alternatives to drugs and alcohol for relieving mental and physical stress.

Ron Herman
Albuquerque, New Mexico

While I agree that most of Professor Wolke's list of unscientific services fall into the realm of woo-woo, he has lumped in some perfectly mainstream, acceptable practices with the questionable ones.

Allopathic medicine? I'm willing to bet every reader of SKEPTICAL INQUIRER has visited one. This is another term for conventional medicine (albeit a term often used pejoratively by homeopathic practitioners). Allopaths are MDs.

Geriatric massage? What does he have against old people getting rubbed down? Sometimes this is the only time anyone touches them.

Grief counseling? Hospice and other fine organizations offer this for those who have lost loved ones, and I daresay most of us—scientifically oriented or not—have had some need of this.

Hot rock massage? It's relaxing, not magic. And therapeutic massage is just that—therapy for sore muscles. None of these belong on a list that includes homeopathy, chakra balancing, soul coaching, and dowsing!

So "read 'em and weep?" Maybe for some things on this list but certainly not all.

Susan Sackett
Scottsdale, Arizona

In "Stalking the Nutty Notions," Robert Wolke has a jolly time listing and dismissing as many of the "crackpot" advertisers as he can find in a recent alternative publication. An unmistakable tone of mockery runs through his article and Rob Pudim's cartoon, which shows two idiotic people entering a carnival. He even puts a fat lady in the tarot booth. But condescension and mockery are not science, nor are they rational. Such an article contributes nothing to our understanding of healing, therapy, or spirituality and appeals only to readers who enjoy feeling superior.

Gregory Nissen
Staten Island, New York

Nessie Not Messy

I am moved to write by the letter from Dan Whipple in the January/February 2008 issue regarding the Loch Ness Monster.

Your correspondent asks why a (crypto) zoologist would want to study Nessie rather than an otter. I can think of several reasons. Here are ten of them:

1. No messy cages to clean out when studying in captivity.
2. No worrying about nutrition and disease for your experimental animals.
3. No pesky animal ethics committee applications.
4. The possibility of instant worldwide and everlasting fame when you actually capture one. A real one, not a video, blurred photograph, or Google Earth image.
5. Limited need for laboratory space and expensive chemicals.
6. Electron microscope time is kept to a minimum.
7. Ready access to the media.
8. A straightforward literature review.
9. A pleasant study area.
10. "I work on the Loch Ness Monster" is a great pickup line.

Peter Weekes
Ness Valley (really!)
New Zealand

The Skeptic Tank

I should resist this, I really should; I mean, I have a reputation to protect. Nevertheless. . . .

Q: Where do all the scams and theories that have been debunked by the SKEPTICAL INQUIRER magazine end up?

A: In the skeptic tank!

I'll go away quietly now. . . .

Alan Dean Foster
Prescott, Arizona

The letters column is a forum for views on matters raised in previous issues. **Letters should be no longer than 225 words.** Send letters as e-mail text (not as attachments) to letters@csicop.org. In the subject line, provide an informative identification, e.g.: "Letter re: Jones evolution article." Include your name and address at the end of the letter. You may also mail your letter to the editor to 944 Deer Dr. NE, Albuquerque, NM 87122, or fax it to 505-828-2080.

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